

**THE RAILWAY GAZETTE**

A Journal of Management, Engineering and Operation  
INCORPORATING

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## NOTICE TO SUBSCRIBERS

Consequent on paper rationing, new subscribers in Great Britain cannot be accepted until further notice. Any applications will be put on a waiting list, and will be dealt with in rotation in replacement of subscribers who do not renew their subscriptions. Orders for overseas destinations can now be accepted.

## POSTING "THE RAILWAY GAZETTE" OVERSEAS

We would remind our readers that there are many overseas countries to which it is not permissible for private individuals to send printed journals and newspapers. THE RAILWAY GAZETTE possesses the necessary permit and facilities for such dispatch.

We would emphasise that copies addressed to places in Great Britain should not be re-directed to places overseas.

## TO CALLERS AND TELEPHONERS

Until further notice our office hours are: Mondays to Fridays 9.30 a.m. till 5.30 p.m.

The office is closed on Saturdays

## ANSWERS TO ENQUIRIES

By reason of staff shortage due to enlistment, we regret that it is no longer possible for us to answer enquiries involving research, or to supply dates when articles appeared in back numbers, either by telephone or by letter.

## ERRORS, PAPER, AND PRINTING

Owing to shortage of staff and altered printing arrangements due to the war, and less time available for proof reading, we ask our readers' indulgence for typographical and other errors they may observe from time to time, also for poorer paper and printing compared with pre-war standards.

## Extended Holidays for Railwaymen

MR. JOHN BENSTEAD, General Secretary of the National Union of Railwaymen, announced at the union's annual conference at Scarborough on July 6 that as a result of negotiations with the railway companies by the union, in association with the Associated Society of Locomotive Engineers & Firemen, the Amalgamated Engineering Union, and the Confederation of Shipbuilding & Engineering Unions (representing the employees' side of the Railway Shopmen's National Conference), the railway companies had agreed that on the termination of Government control of the railways they would grant the staff, after twelve months' service, twelve days' annual leave with pay each year instead of six days as at present. In addition, staff who have not had leave on two of the six Bank or Public Holidays will be given leave with pay on two other days. In the case of shopmen whose normal work is suspended on Bank or Public Holidays, payment will be made for two of these holidays each year. It will be observed that these arrangements will operate only after Government control of the railways has ceased. Under the Railway Control Agreement control is to be continued for a maximum of one year after the cessation of hostilities and it will be recalled that the Parliamentary Secretary to the Minister of War Transport expressed the opinion in the House of Commons some time ago that control might well last two years after the cessation of hostilities. It is understood that the companies have made this concession as part of their post-control plans and that it does not affect the clerical and supervisory staff who already receive at least two weeks' annual holiday.

## Nationalisation of Railways

Before the General Election, there were several references to railway nationalisation and to the results which had attended. In our June 22 issue we commented on inferences which were drawn by *The Daily Mail* in respect of the railways in Australia, and a week ago we noted Mr. Lyttelton's references not only to Australia, but to France and Italy. Just why it should be thought necessary to endeavour to prove lack of success by State-owned railways in widely-spread parts of the world, in many cases where operating conditions are dissimilar to those in Great Britain, in an argument concerned only with the British railways, is not clear. There are countries where, because of sparse population, or for other reasons, there would be no railways were they not provided by State. Where railways have been provided by the State for the people, it is not unreasonable that the people should help to meet the cost of operating them, if there is a deficit. In Great Britain the railways have been provided and maintained by private enterprise. They represent the joint ownership of a great body of individual investors. There is no reason to suppose—there is evidence to the contrary—that they would be better managed, more efficient, or more useful to the public, if they were State managed. What is needed for the British railways is equality of opportunity with other forms of transport, knowledge of the part they and the other forms of the inland transport industry will have to play in the future, and freedom from the clammy hand of bureaucracy.

## L.N.E.R. Expenditure

To cope with wartime traffics it has had to handle, the L.N.E.R. spent £83,841,000 on permanent way and works, and locomotives, carriages and wagons during the five years 1940-1944. The outlay was made up as follows:—

Year	Permanent Way and Works	Locomotives	Carriages	Wagons	Total
	£000s	£000s	£000s	£000s	£000s
1940	5,331	3,721	1,557	2,521	13,130
1941	5,852	4,007	1,482	3,665	15,006
1942	6,445	4,786	1,423	2,972	15,626
1943	7,173	6,321	1,589	3,609	18,692
1944	8,445	7,020	1,598	4,324	21,387
Total	33,246	25,855	7,649	17,091	83,841

The expenditure on renewals and repairs to permanent way and works included the complete renewal of 1,392 miles of track and the use of 1,695,570 cu. yd. of ballast, 220,714 tons of rails, and 4,435,189 sleepers. The locomotive expenditure was made up of £1,616,000 for renewals and £24,239,000 for repairs; the former figure was in respect of the construction of 185 new locomotives (160 of which were built in L.N.E.R. workshops and the rest by other railways), and the latter was represented by 21,609 repairs. Few new passenger carriages have been built during the war; the number during 1940-1944 was only 518, of which 390 were completed during the first two years. The carriage expenditure of £7,649,000 includes repairs to 167,340 vehicles. The outlay of

£17,091,000 in respect of wagons covers the construction of 30,309 new vehicles (24,629 in L.N.E.R. workshops and the balance by contractors) and the repair of 2,789,155 wagons.

### The York-Scarborough Railway Centenary

Although a scheme to join York with Scarborough was promoted in 1842, it did not materialise as a separate undertaking, and it was left to the York & North Midland Railway, under the enterprising leadership of George Hudson, the Railway King, to secure the necessary Act of Parliament on July 4, 1844, to make a line from York to Scarborough, with a branch to Pickering, in all 48½ miles. No outstanding engineering difficulties were encountered, and Hudson, with George Stephenson as Engineer, succeeded in completing the line (mostly single) within the brief period of one year, so that traffic was inaugurated formally on July 7, 1845, exactly a hundred years ago. Moreover, it was constructed at the very low cost of less than £6,000 a mile. The chief engineering works were the bridge over the River Ouse immediately on leaving York, and the one spanning the River Derwent at Huttons Ambo. The opening ceremony was typical of the times and of George Hudson. Free tickets to Scarborough were issued liberally, and holders were invited to a sumptuous breakfast in the York Guildhall. The inaugural train consisted of 35 carriages, drawn by the two locomotives *Hudson* and *Lion*. A stop was made at Castle Howard where the guests were provided with further refreshments by Lord Morpeth, and on arrival at Scarborough a most "elegant luncheon" was served in the station, after which the party made a triumphal tour of Scarborough before returning to York and a further sumptuous repast. This optimism at least was well founded, for the popularity of the line has grown enormously with the succeeding years, and the 4 trains each way (and one on Sundays) which sufficed in 1845 had grown to more than 30 a day in the years before the outbreak of war in 1939.

### The Commonwealth Railways of Australia

Our reference last week to the report on the operations of the Australian Commonwealth Railways for the year ended June 30, 1944, has resulted in correspondence indicating that some of our readers do not fully appreciate the peculiarity of railway ownership on the Australian Continent. The position is that the public railways in the individual States (with trivial exceptions) are owned by the State Governments, and the Commonwealth Railways are superimposed on these State systems in areas where local requirements would not have justified the construction of the lines, but they were desirable in the Commonwealth interest. The largest Commonwealth line is the Trans-Australian Railway, which comprises 1,108 miles of 4-ft. 8½-in. gauge line linking Western Australia and Southern Australia. Then there are the Central Australia Railway (Port Augusta to Alice Springs, 771 miles) and the North Australia Railway (Darwin to Birdum, 316 miles) both of 3-ft. 6-in. gauge, which form two links in a north-south chain of communications essential to the pastoral and mining industries in the large tracts of country which they serve. The intervening road link was improved enormously just before the extension of the war to the Pacific zone, and this north-south chain of communications has become of considerable strategic importance and has made a vital contribution to the Australian war effort. The remaining Commonwealth railway is a section of 5 miles, worked by the New South Wales Government Railways, which serves the federal capital of Canberra. A map on page 47 shows these various lines.

### French Liner Losses

Monsieur Jean Marie, Chairman of the Cie Générale Transatlantique, in entertaining a number of his technical colleagues at the Savoy Hotel on Wednesday of last week recounted the very serious losses in ships which the French Line had sustained everywhere, and particularly on its North Atlantic and West Indies services. Those big passenger liners of the French Line have provided valuable rail traffic by their calls, notably, at Plymouth and Southampton, and it was with something of a shock that his audience learned that of the big ships on the North Atlantic only the nearly 20 years' old *Ile de France* remains, and the *Normandie*, *Champlain* and *De Grasse* have gone. Fifty-eight thousand tons of the West Indies' fleet has been destroyed by enemy action and the total losses of the company amount to 68 per cent. of the pre-war fleet. It will be no easy task to build new tonnage, particularly with the devastation which has been wrought in the shipyards of France itself. In any case these large class passenger liners take a long time to build and modest estimates under present-day conditions suggest that no important liner company can expect much in the way of replacement until about 1948. The prospect is just as depressing

for the thousands of passengers who wait the first opportunity to resume their business and pleasure visits abroad; the alternative seems to be dependence on the older units and some of the make-shift expedients which were a feature of the last immediate post-war era. Meanwhile the call for troopships is more insistent than ever with the war going strong in the Far East, and there is unlikely to be that recruitment of ex-enemy tonnage which was at least a help just after the last war even if it was an embarrassment in later years.

### The Sind-Pishin Railway

Elsewhere in this issue are described the methods by which the 155-ft. through truss span was removed from its lofty perch 230 ft. above the bed of the famous Chappar Rift. This bridge was the most spectacular feature of the Sind-Pishin mountain section, the pioneer broad-gauge mountain railway of the Indian North West Frontier, completed in 1887. Its principal features were described in an article entitled "A Remarkable Indian Frontier Railway" which appeared in our issue of July 26, 1940. Soon after its construction it was forced into the background by the building of the present main line to Quetta, the Mushkaf-Bolan section—with its long length of double line but with even steeper gradients, 1 in 25, as against 1 in 45—a considerably shorter route designed for much heavier traffic. Consequently, traffic over the original loop (Sind-Pishin) line was very light, and, although it was decided for strategic reasons to retain it for many years in good working order as a second string to the Bolan line, 48 miles of it, including the Louise Margaret bridge over the Chappar Rift, were closed to traffic in the autumn of 1943. The northern part of this line remains open and is worked as a branch from Bostan junction near Quetta.

### The U.S.A. Pullman Position

When Pullman, Incorporated, as a result of the anti-trust suit brought against it by the United States Federal Government in 1940, was ordered by the Federal District Court at Philadelphia to separate its sleeping-car operation from its car manufacturing business, and to sell either one or the other, as was expected it was the manufacturing business in which the company elected to remain. The U.S. Justice Department sought to obtain a ruling that in the event of the company being unable to dispose of the sleeping-car unit, it should not be allowed to retire from it, and thus to leave the railways and the travelling public without sleeping-car service; in that event, it was claimed, the company should be compelled to sell its manufacturing business. The court, however, refused to share this view, and left the Pullman concern with a relatively free hand, except that the former reserved its right of jurisdiction in requiring to approve the purchaser and the terms in the event of a sale being effected. Immediately after the separation decree had been issued, committees were formed in the Eastern, Western, and South-Eastern regions of the U.S.A., under the auspices of the American Railroad Association, to consider the position, but the railways considered that they should not be compelled to undertake the operation of their own sleeping-car services until after the end of the war. The Government attorney had opposed the Pullman plan to dispose of the sleeping-car service to a consortium of the railways concerned, claiming that this would be merely a "gesture of compliance." As matters stand, Pullman is given until March 22, 1946, to effect a sale of either one half or the other of its business.

### The Collision on the B. & C.D.R.

A report on the serious collision which occurred on January 10 near Ballymacarrett Junction on the Belfast & County Down Railway, by which 22 lives were lost, has been issued, prepared by Mr. R. Dundas Duncan, Railways Inspector to the Government of Northern Ireland. The accident was the worst that had occurred in Ireland since that at Armagh in 1889. It occurred on a route fitted with continuous track circuiting and automatic and controlled signals; the colliding train—a rail motor—had passed an automatic signal at danger, under the "stop and proceed" rule. The report, of which a summary appears elsewhere in this issue, finds that the degree of caution required under the rule by the conditions at the time was not being observed, and the disastrous results of the collision are in themselves evidence of that. Accidents under the "stop and proceed" rule have occurred elsewhere from time to time and have resulted in this country in the adoption of the telephone and "P" sign system of working by our main-line undertakings. Mr. Dundas Duncan is of opinion that this should be instituted on the B. & C.D.R., and Clearing House rules followed; he recommends certain other changes, together with improvements in the control gear and door arrangements on the rail-motor. He finds no fault, however, with the signalling system, as such.



## Private Enterprise and Efficient Transport

EXPERIENCE has shown that during the heat engendered by a general election, many extravagant and sweeping statements and claims are made, which in normal circumstances would not have been put forward. We suggest that an article in *The Daily Herald* by Mr. Philip Noel-Baker, who until the dissolution of Parliament was Parliamentary Secretary to the Ministry of War Transport, comes within this category. Starting from the premise of a passage in the Prime Minister's broadcast on March 22, 1943, which stated "There is a broadening field for State ownership and enterprise, especially in relation to monopolies of all kinds," he confidently asserts that Mr. Churchill clearly had inland transport in mind, a statement which, of course, is purely a matter of opinion.

Referring to a statement by Lord Leathers that "for the first time we have evidence of the benefits of a co-ordinated transport system and I do not think that industry will ever want to go back to the conditions prevailing before the war," he quotes also the view of the Royal Commission of Transport, 1930, "that without unification . . . no attempt to bring about co-ordination would be successful," and argues that without the full co-ordination of inland transport throughout the war the immense traffics of the last four years could not have been handled.

So far as the Commission's report is concerned, he does not quote the statement in the preceding paragraph that the nationalisation of the railways, leaving other forms of transport in other hands, would certainly not produce any real co-ordination. Neither does he mention its remarks that under existing circumstances any attempt at coercion would be a great mistake and would be objected to not only by the transport agencies but also by traders, and that any such attempt would probably prove to be quite ineffective in practice. The fact is that there certainly has not been full co-ordination of transport during the war in the sense that the Royal Commission had in mind. It is true that the Ministry of War Transport directed a certain amount of traffic by rail, road, or coastwise shipping to relieve undue pressure on any one branch of transport, but where the service offered by two forms of transport was approximately the same, the trader or passenger generally had, and exercised, the option to choose the cheaper or that which best suited his convenience. For Mr. Noel-Baker to say that without this alleged co-ordination transport could never have handled the immense war traffics, is entirely untrue so far as the railways are concerned.

The high standard of all-round railway efficiency which existed in 1939 has been the principal factor in enabling the railways to fulfil their gigantic task throughout the war years, even when their tracks, rolling stock and buildings were operating under continual and severe hostile air attacks; and this standard was made possible by the low dividends paid to railway stockholders. His statement that co-ordination was possible during the war because the profit motive was totally cut out is equally incorrect. No exception can be taken to his general contention that all sections of the country have a right to good transport facilities and that in some places the services may be uneconomic, but he then asks: "How can private enterprise deal properly with that?" The answer is, of course, that the railways have always had to face the fact that certain lines and facilities were not self-supporting, but they bore the loss in the national interest.

Complaint is next made that pre-war competition kept the railways in constant difficulties, left road transport inadequate and was bringing the canals to ruin. Further, it did not produce the right operating units, the capital required, and meant the unnecessary duplication of tracks and stations. Taking the last point first, it is sober fact that the duplication of tracks and stations proved of inestimable value during the hostile air attacks and the nation's war effort would have been sadly crippled had those facilities not been available.

As to the failure to provide the right operating units, the immense traffic moved so successfully and punctually provides a pretty effective reply. He omits all reference to the fact that the pre-war difficulties of the railways arose solely because Parliament has failed badly in its transport legislation to hold the balance evenly between the railways and road transport. This was admitted by the Minister of Transport on May 24, 1939, when he stated that the Government had decided to accept in principle certain recommendations of the Transport Advisory Council as to the relaxation of statutory regulations governing the conveyance of merchandise by railways, so as to enable the railways to make reasonable charges, subject to certain safeguards. He also intimated that the Govern-

ment intended to introduce appropriate legislation in the next session of Parliament, but unfortunately the outbreak of war prevented this being done. Whatever may be the Government's future policy in respect to the railways, it must take into account the widely differing statutory charging regulations under which rail and road transport at present operate.

Mr. Noel-Baker repeats the allegation that before the war the Government had to guarantee loans for railway work to give employment because private enterprise could not raise the required money. The facts are that to relieve unemployment, particularly in the distressed areas, during the slump of the early 'thirties, the Government decided to finance special schemes of national works. The railways were asked and agreed to co-operate, and carried out certain railway works which they would not normally have undertaken at that time, without any cost whatever to the State; this was the fifth occasion on which they have so co-operated during the last twenty years. Finally, he claims that the road-haulage problem has been successfully solved by the "admirably successful and fully nationalised Road Transport Board of Northern Ireland," but omits to point out that it has already incurred a deficit of several hundreds of thousands of pounds on its operations to date!

## The Possibilities Offered by Modern Signalling

IT is generally admitted that the cessation of hostilities in Europe and the return of something approaching to normal conditions will call for the application of the latest scientific knowledge and most approved practice to the development of our railway system in fitting it for the part which the future welfare of the country requires it to play. It is known that amidst all the distractions and anxieties of the last five years this need has been recognised and considerable thought been given to meeting it, both by railway and government officers. Plans have been considered for effecting a general improvement in the various branches of railway equipment, with the object of providing better facilities for all classes of traffic when our industries are free to turn once more to their ordinary tasks. There is little doubt that a raising of the average speed of a great number of trains is in contemplation, with the fitting of improved braking to freight trains, the rebuilding of the older station layouts, and an extension of electrification to sections suited to it.

In this work, of vital importance to the prosperity of Great Britain and the ability of her industrialists and workmen to hold their due place in the world's markets, signalling will be called on to assume an increasingly influential place. It is steadily becoming recognised that signalling is not a safety measure only. It is much more than that. It is a factor of prime consideration in the whole general question of efficiency, and the sound conduct of traffic. Safe working, indeed, has long been the distinguishing mark of the railway. It was achieved comparatively early in its history and although the point was perhaps seldom dwelt on, as the ensuring of safety tended to overshadow it in most persons' thoughts, nevertheless the early signal engineers and inventors saw clearly that their products were directly contributory to the ability of the railway to provide that capacity for conveying great loads of persons and goods, which played so large a part in the industrial development of this and other countries in the last century. In more recent years, however, safety has been taken for granted. We have long possessed means of attaining it to a degree satisfying all reasonable claims and in most countries the equipment essential for so doing is required by law. The fundamental principles involved no longer are in dispute. It is purely a matter of how best to carry them into effect and also obtain as many other advantages as possible.

In doing this we very often gain some increase in safety, in that the possibility of mistakes being made by the operating staff is still further reduced, in some cases practically to nothing, but it is not with this object that our modern installations are primarily undertaken. Their purpose is to increase the overall efficiency of working by utilising the tracks to the best advantage and enabling higher speeds to be maintained and heavier loads carried with the minimum expenditure, including an important reduction of cost afforded by the elimination of unnecessary stops.

Another feature of the best examples of modern signal engineering is a reduction of much of the mere routine work on the part of the operating staff, work which was formerly so prominent. Larger areas can now be brought under the control of a single signal box and the time spent in the transmitting, receiving, and passing on of messages—using that term in its widest

sense—is very appreciably diminished. This soon makes itself felt in the better handling of the train movements. It is easier for those on duty in such circumstances to take broader decisions and to take them in good time, which in turn contributes to a more regular flow of traffic. The minds of the staff become free to be concentrated on what should be their main pre-occupation, the punctual running of the trains, and they are relieved of the necessity of noting the actual condition of the various sections of line by direct outside observation. All this has now become a highly specialised art, the possibilities of which are as yet perhaps fully appreciated by a comparatively limited circle. They deserve to be more widely known, for they will certainly be called upon to fill an important place in the plans now maturing for the peace years, if the railways are to give of the best to the national good.

In the present issue there concludes a series of articles on this subject contributed by a distinguished writer on signalling, Mr. O. S. Nock, who has had exceptional opportunities for studying its technical aspects and combining his experience as a signal engineer with a wide knowledge of locomotive practice and railway engineering and operation generally. It has been his purpose to endeavour to show to what level of progress signal engineering has now attained and discuss, with the aid of selected typical track and station layouts, the possibilities presented by it and its ability to contribute effective—and indeed indispensable—aid to our railways in fulfilling the tasks now facing them.

### The Railways of New Zealand

IN respect of the working of the New Zealand Government Railways for the financial year ended March 31, 1944, the Minister of Railways (the Hon. R. Semple) has issued his customary statement, accompanying the comprehensive annual report of the General Manager of Railways. He says that the financial results of the year's operations may be regarded as entirely satisfactory. The gross revenue, £15,325,306, set a new record, exceeding the previous year's revenue by £1,196,313, or 8.47 per cent. Expen-

It is deemed advisable, while railway finance is buoyant, to charge to working expenses an amount estimated to meet maintenance expenditure which would have been incurred but for wartime conditions rather than to make a more favourable showing for the present and load such costs on to the post-war period. As a result there is shown a deficit of £197,754 of net revenue in relation to interest charges, compared with a surplus of £203,867 in 1942-43, when, for the first time since 1926, the net revenue was more than sufficient to meet the full interest charges; in fact, it was probably the first time that the railways can be said to have met their obligations in full, for in the year ended March 31, 1926, the interest charges were met only by reason of the payment from the Consolidated Fund of a subsidy on branch lines amounting to £359,540, while before the reorganisation of the accounting system on April 1, 1925, no provision was made for depreciation, renewals, and reserves, and no annual contribution to the superannuation fund was required.

The amount of traffic handled during the year 1943-44 was greater than ever before in the history of the railways. The number of ordinary passenger journeys exceeded the previous year's record by 1,146,109 (6.67 per cent.), and the tonnage hauled also set a new record of 9,026,626 tons, an increase of 1.56 per cent. over the previous year's figure.

Up till that time the results showed much greater increases over the comparable figures for last year than obtained at the end of the year. In connection with the mention of restrictions, it is of interest to note the heavy increase in the purchases and consumption of coal by the railways since the outbreak of war. For the year ended March 31, 1940, the purchases of New Zealand coal amounted, in round figures, to 490,000 tons, while for the year under review the purchases reached 615,000 tons; the consumption figures for coal used by the locomotive department in the same years were 492,000 tons, against 634,000 tons, an increase of nearly 29 per cent.

The Minister of Railways emphasises that the phenomenal increase in railway traffic during the last four years has been brought about largely by wartime conditions, resulting in a shortage of tyres and petrol with consequent curtailment of road services, a shortage of coastal shipping, longer hauls due to the centralisation of shipping, and the heavy movement of Armed Forces personnel and military stores and equipment. During the year under review the revenue from both military fares and freights showed substantial increases, and fares from this source provided 34 per cent. of the total passenger revenue, while military freights provided 9.47 per cent. of the total goods revenue. Under present conditions, and apart from the restrictions, it cannot be expected that the existing high level of traffic will be maintained. The war has departed farther and farther from the shores of New Zealand, and a substantial decrease in military fares and freights must be expected, which, despite a possible increase in production, will result in a substantial reduction in net revenue. On the other hand, railway tariff rates have not been raised since the outbreak of war, and the increased revenue has been obtained solely by the volume of traffic handled.

### Boiler Feed Water Treatment

ATTENTION has been directed lately to the possibility of treating locomotive feed water after it is delivered to the boiler, rather than before it is supplied to the locomotive, in view of the economic considerations involved. From the driver's viewpoint, it does not much matter whether he takes "pre-treated" water on his tender, or whether the water receives its treatment after passing through the injector or feed pump, so long as satisfactory conditions can be maintained in the boiler.

From the administrative viewpoint, there is a great difference in the amount of capital invested in "pre-treatment" equipment, whether at running sheds, stations, or water troughs, and that required on the locomotive itself. Furthermore, pre-treatment plant must be adjusted for each type of water supply, and moreover it needs the constant attention of trained staff. On many railways supplemental "after-treatment" is given anyway, so it is logical to examine the present situation, so as to

Particulars	Year ended March 31				
	1940	1941	1942	1943	1944
Total miles open for traffic ...	3,390	3,390	3,390	3,460	3,504
Average miles open for year ...	3,371	3,390	3,390	3,403	3,469
Capital cost of opened and unopened lines ...	£71,087,455	£73,048,958	£73,723,223	£73,951,515	£74,289,351
Capital cost of open lines ...	£63,059,188	£64,762,794	£64,904,020	£68,685,063	£70,999,125
Capital cost per mile of open lines ...	£18,802	£19,014	£19,146	£19,851	£20,262
Gross earnings ...	£10,199,070	£11,160,218	£11,938,338	£14,128,993	£15,325,306
Working expenses ...	£9,010,039	£9,465,574	£10,056,034	£11,302,413	£12,757,336
Net earnings ...	£1,189,031	£1,694,644	£1,882,304	£2,826,580	£2,567,970
Interest charges ...	£2,575,196	£2,746,544	£2,756,146	£2,622,713	£2,765,724
Percentage of total working expenses to gross earnings ...	88.34	84.82	84.23	79.99	83.24
Percentage of net earnings to average capital invested in open lines ...	1.96	2.64	.90	4.31	3.71
Railway operating earnings ...	£8,761,637	£9,694,190	£10,383,880	£12,415,080	£13,464,979
Railway operating expenses ...	£7,943,120	£8,406,790	£8,902,592	£10,019,659	£11,365,917
Net railway operating earnings	£818,517	£1,287,400	£1,481,288	£2,395,421	£2,099,062
Percentage of railway operating expenses to earnings ...	90.66	86.72	85.73	80.71	84.41
Operating earnings per average mile open ...	£2,599	£2,860	£3,063	£3,648	£3,881
Operating expenses per average mile open ...	£2,356	£2,480	£2,626	£2,944	£3,276
Net operating earnings per average mile open ...	£243	£380	£437	£704	£605
Operating earnings per train mile ...	157.31	171.58	178.28	196.81	210.82
Operating expenses per train mile ...	142.62	148.80	152.85	158.83	177.95
Net operating earnings per train mile ...	14.69	22.78	25.43	37.98	32.87
Passengers, ordinary ...	8,283,067	9,440,087	11,105,627	17,171,214	18,317,323
Season tickets ...	972,769	1,055,742	1,167,115	1,377,825	1,518,045
Total passenger journeys	24,454,014	26,276,923	28,610,945	36,133,268	38,611,267
Goods tonnage ...	7,077,298	7,754,768	7,734,650	8,035,046	8,233,489
Livestock tonnage ...	596,652	671,414	739,115	852,043	793,137
Train mileage (revenue) ...	13,366,798	13,559,646	13,978,961	15,139,882	15,328,987
Engine mileage ...	18,199,622	18,625,115	19,147,871	20,736,574	21,095,690

diture for the twelve months amounted to £12,757,336, an increase of £1,454,923, or 12.87 per cent. The net revenue of £2,567,970 showed a decrease of £258,610 (9.15 per cent.) compared with 1942-43, and the net return on capital was 3.71 per cent., compared with 4.31 per cent. Results for five years are tabulated herewith.

A factor in the increased expenditure which warrants special mention is the provision of £410,500 for deferred maintenance.



discover whether after-treatment alone could not be made sufficient for the needs of the locomotive.

The internal treatment of feedwater has been given particular consideration in a paper, "Treating Boiler Feed Water," recently presented to the Master Boiler Makers' Association, in America, in which Mr. Jean de Frank, of the American K.A.T. Corporation, New York, summed up the possibilities of the method. He pointed out that the internal treatment of feed water may follow one of three methods: chemical (inorganic); inorganic-organic; or all-colloidal/organic.

The chemical (inorganic) method includes the use of all substances which react chemically with the scale-forming salts present in water—a treating chemical is introduced into the water to react with the scale-forming matter (for example, calcium or magnesium salts) existing in it, to produce new salts which would be non-scale-forming or otherwise less objectionable than the original ones.

The usefulness of this method is limited by the specific chemical compositions involved, and it is not ideal for waters of varying contents. Much effort therefore has been directed towards finding materials which would be effective on all impurities in all waters. In both research and practical application, some physical-acting materials, or "organic colloids" have eventually been found which possessed the properties sought.

A colloid is a substance, the particles of which, when properly dispersed, fall within the range of size just above molecules. A colloidal dispersion is intermediate in size between a true molecular solution and the suspension. The enormous surface area of colloids prevents them from passing through fine filters. Starch, tannin, glue, and gelatin are common examples of colloids.

The two important properties of organic colloids in this connection are adsorption and coagulation. The former may be defined as the ability of a body's surface to retain substances coming into contact with it; coagulation means the flocculation of matter and its precipitation as a gel. The particles of a colloidal dispersion carry an electrical charge which may be neutralised by scale-forming salts in boiler water, when coagulation and mutual precipitation, as a gel, of both colloid and scale-forming salts will occur. The gel prevents interlocking of crystals of scale, and is also spread over all metal surface in contact with the water.

The true effectiveness of colloids in the reduction of foaming lies in the fact that the suspended matter is removed with the gel when coagulation and precipitation take place. A further great advantage of this form of treatment is that colloid conditioning does not in itself introduce the quantities of treating solids needed when inorganic chemicals are used. Organic colloids will not, of course, stop priming directly due to uneven firing, inadequate steam space, too high a water level, or sudden full-regulator openings.

If both colloidal and inorganic chemical treatments are used together, two completely opposing principles are involved, and one cannot predict what the results will be. The use of these two treatments, not simultaneously, but successively, however, makes an excellent method. Ideally, the action of the inorganic chemicals should be completed before using the organic colloids. In practice, many American railways having "pre-softening" equipment are now using organic colloids as after-treatments, with extremely good results in the elimination of scale, the reduction of foaming, and a consequent decrease in the expense of blow-down.

As a result of intensive research in connection with boiler plant, much of which was done in Riga (Latvia), the final practical application of a colloidal emulsion took place in 1929 on Thornycroft marine boilers in Latvian naval and merchant vessels. The results were so good that in 1934 the Latvian Government applied the treatment to all State-operated locomotives. Subsequently many other railways in the Baltic regions followed suit. Successful trials next took place on Polish and Dutch railways, and in 1937 it was applied to the French chemin de fer de l'Est. German occupation put an end to further use of the method, but it has been continued in neutral Sweden. Since 1938 it has been manufactured and marketed in the U.S.A. by the American K.A.T. Corporation, New York, to whom we are indebted for information contained in this article.

When inorganic chemicals are used, boiler water concentration must be kept below certain limits, otherwise "uneasy" steaming, foaming, and priming will occur. In America, concentrations are commonly kept between 200 and 250 grains per gallon. Published figures show that, within this range, it is

necessary to blow about 50 gal. of water, to reduce boiler-water concentration by one grain per gallon. Blow-down is thus an extremely costly procedure. Using organic colloids, however, European railways have found it necessary to open the blow-down valves for 3-4 sec. only, except at running sheds, where the blows lasted 8-10 sec. In America, experience has confirmed the savings due to organic colloids; observed results show a reduction in blow-down to about one-tenth of the usual amount before organic colloidal emulsions were used.

Finally, such colloidal emulsions have enabled the mileage between boiler washings to be increased very greatly. In November, 1942, one of the major U.S.A. railways tested the treatment in a 4-8-4 locomotive with a standard train. The water used was pre-treated by the Zeolite process; but since the hardness of the raw water was from 5 to 23 grains per gallon, total solids were high, and foaming was common; consequently boiler washings were needed every two days. On the one-month test, the locomotive gave excellent performance; it was opened after 15 days, not because of foaming but for inspection, and was found to be in excellent condition in all respects.

### Empire Builders

THE popular conception of an Empire builder as a large, bronzed man in khaki shorts and a sun helmet, must now give place to another. He may equally well be a little man in dark clothes with a portfolio tucked under his arm, dodging amid the buses of Whitehall. Wartime contacts between business and bureaucracy may have familiarised some of our readers with the pursuit of empire building, as the Civil Servant archly describes the process of casting about for fresh files to conquer. In an organisation so prolific with sections and branches, there must be many which perform functions overlapping into the territories of several administrations. A bold and venturesome man, therefore, may easily rob a weaker brother of an office full of clerks, using no more unseemly weapon than eloquence at a meeting. By so doing he not only gains in official prestige by reason of his expanded staff, but is rewarded with the headier wine of secret admiration and envy.

Not all civil servants approve of this procedure, as a result of which they may find themselves moving at frequent intervals from one inland spa to another. Others, of course, find it convenient in that it may cause them to be transferred nearer to where they want to be, and such displaced persons are eagerly sought by the empire builder. One civil servant looks much like another, and the appearance of a few more in an office need not give rise to comment even if the reason for their importation is not immediately obvious.

The acquisition of staff is one of the higher flights of empire building. It is necessary first for the empire to be created, for some line of action to be found which will provide the foundation. Perhaps the novice empire builder has another and more experienced empire builder above him, and Mr. X will listen kindly to the aspirations of Mr. Y if they are likely to increase his own importance. Through many links the process goes on until at last, far away in some requisitioned building of vast proportions, an assistant director deletes the "assistant" from his office door and becomes a full director. Further than this we need not go. We will not portray the clash of rival directorates. When the Directorate of Procedure & Planning finds that its territory is being invaded by a new Directorate of Means & Methods, events move on to higher planes.

We do not wish to imply that every civil servant, when he goes home, exchanges his bowler hat for a crown of laurel leaves and strikes attitudes in front of the mirror in the hall stand. Most of the permanent ones will declare that empire building is a wartime growth, sprung from a degree of expansion which in some minds has obscured the fact that the Civil Service is a public service, and not an institution to provide careers for its members by offering them facilities for taking in each other's washing. We do not doubt that this is a satisfactory explanation, but it is also a reason for not allowing the army of civil servants to multiply without check, or to descend in their millions on industries which preserved their ideas of what public service means in the difficult conditions of the war years as well as in peace. Meanwhile, whatever line of defence he chooses to take, we doubt whether the civil servant exists who can say that he has never heard of empire building, nor can there be many who have not at some time studied, admired, and discussed the form of local empire builders with the same sort of partisan-ship as is accorded to racehorses and local football teams.

## LETTERS TO THE EDITOR

(The Editor is not responsible for the opinions of correspondents)

### Track Inspection on the L.N.E.R.

Egyptian Government,  
41, Tothill Street, S.W.1. July 6

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—As a matter of railway history, it might be of interest to hear that a system of recording track conditions, almost exactly similar in form to that referred to on page 10 of *The Railway Gazette* for July 6, was practised for a time on the London & South Western Railway, about 40 years ago.

The writer, who was then a pupil with the late Mr. J. W. Jacobm-Hood, the Chief Engineer to the L.S.W.R., recollects clearly the process.

Cards were prepared, on almost precisely the same form as those now instituted on the L.N.E.R. An annual inspection of the line was carried out, to which Mr. Jacobm-Hood used to invite leading Permanent Way Engineers of other lines to act as judges. We travelled in a special train, with an observation window fitted into the back of the inspection coach. There was a committee of two observers for each item ("line and level" for example) who awarded marks.

At the end of the trip prizes were given for (a) the best gangers length in each inspector's area, (b) the best inspection area in each division, and (c) a cup for the best division in the whole system.

I may add that these annual inspection tours, which occupied some 8 or 10 days, were possibly more enjoyed by the inspection committees than by the gangers.

Yours faithfully,  
R. E. THOMAS,  
Chief Inspecting Engineer

### Improving the Block Telegraph System

Tyer & Co. Ltd.,  
Ashwin Street, Dalston,  
London, E.8. July 9

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—In reference to the article on page 12 of your issue of July 6, it may be of interest to point out that the suggestions made by your correspondent are all well established and embodied in existing designs of block signalling apparatus.

In fact, one type of double-line instrument made by this firm, embodies all the suggestions even to the wording of the indicators which read "line normal," "train accepted," and "train on the line."

The block is held at "train on line" until released by the occupation and clearance of a track circuit at the advance section home signal and a co-operative cancelling scheme is embodied which requires action by both men and is recorded on a mechanical counter. This "cancel release" must, of course, coincide with the train register and I do not think that there is any known case of irregular use in the country where these instruments are used.

Because of different conditions, it is probably true to say that safeguards to block working are more highly developed for some

countries abroad than in Great Britain but developments have been carried out, to engineers requirements, by British firms and lock-and-block schemes and apparatus are available both for single and double lines which practically safeguard against the failure of individuals operating them.

Yours faithfully,  
V. S. KING,  
General Manager

### The Railways VE Day Poster

Martins Bank Building,  
Liverpool, 2. July 9

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—In view of letters which have appeared recently on the above subject in our most august daily paper I draw your attention to the following quotation, which is from Milton "On his blindness":—

"... his state  
"Is kingly; thousands at his bidding speed,  
"and post o'er land and ocean without rest;  
"They also serve who only stand and wait."

I can only suppose that Milton anticipated the Minister of War Transport.

Yours faithfully,  
A. MCB. ARMOUR

### Numbering of Locomotives

390, Wakefield Road,  
Huddersfield. July 7

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—The cost of re-numbering a locomotive (including re-stamping all parts of the motion) is so considerable that it seems hard to justify it by any fancied advantage of one numbering scheme over another. Ignoring this, however, the decision to re-number L.N.E.R. locomotives and the intention to standardise ten classes prompts one to consider what numbering scheme might be adopted.

The G.W.R. long ago achieved a close approach to ordered numbering by making the second figure of a four-figure number indicate the class of locomotive, but the system has not been rigorously pursued.

In starting a new scheme, it may be suggested that the first figure in the number of the engine should be its class number, whatever the total number of figures in its number. On this system, the first engine in a class would bear simply the class number, the next ten would have two-figure numbers, and so on. Thus successive engines in class 4 (for example) would be numbered 4, 40, 41, 42, etc., to 49, 400, 401, 402, etc., to 499, 4000, 4001, 4002, etc., to 4999, a total of 1111 numbers. An advantage of the scheme is the economy in painting and stamping that results from using up the simplest numbers first; for example, a class of not more than 111 engines would have no number with more than three figures. An unconventional feature is that certain engines in class 0 would have the unusual numbers 0, 00, and 000.

This scheme avoids the necessity for memorising blocks of numbers (for example L.M.S.R. class 5, 4800-5499) in determining the class of an engine from its number.

Yours faithfully,  
W. A. TUPLIN

## Publications Received

**Waveform Analysis: A Guide to the Interpretation of Periodic Waves, including Vibration Records.** By R. G. Manley, B.Sc. London: Chapman & Hall Limited, 37, Essex Street, W.C.2. 8½ in. × 5½ in. 275 pp. Price 21s. net.—This book has been written to give practical information to those who are interested in the study of periodic variations—mechanical vibration engineering, electrical and radio research and acoustics. It is more a guide than a comprehensive treatise, but an endeavour has been made to include sufficient details of the basic theory and the methods of analysis, to enable the reader to acquire the essential groundwork of knowledge concerning the properties of complex waveforms, and to pursue the study of any particular method of analysis to a moderately advanced stage. The main object of the book is to present in detail the envelope method of analysis

which enables recorded wavelengths (such as vibration records) to be analysed into their principal constituents without having recourse to mechanical contrivances or to the more exact but cumbersome methods usually known as "Fourier analysis" or Harmonic analysis. The title of the book was deliberately chosen in preference to the more familiar "Harmonic analysis" to emphasise the fact that particular reference is made throughout the text to the needs of scientists and engineers who may require to interpret by analysis many thousands of recorded waveforms. Typical examples of wave functions are illustrated with diagrams. A glossary of terms used in this book forms a useful conclusion.

**Weight Reduction on Railway Rolling Stock: Spanish Edition.**—We have received from the Westinghouse Brake & Signal Co. Ltd. a copy of the Spanish edition of the company's brochure O.P. 14/1 entitled "Weight Reduction on Railway

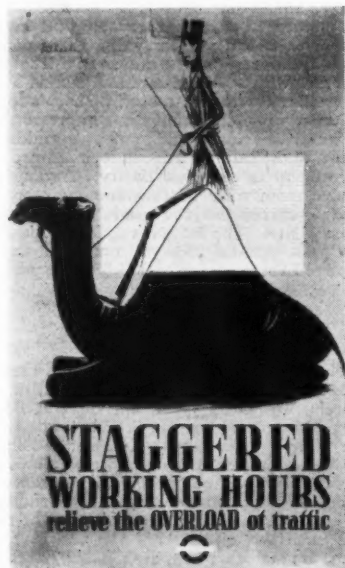
Rolling Stock." This Spanish edition is an exact translation of the company's English brochure, except that some of the illustrations have been re-arranged to give prominence to coaches in service in South America. The brochure describes and illustrates the "Prestall" wrought-steel lever-brake cylinders that permits a saving of 20 per cent. in brake-gear weight. The Spanish brochure has been widely circulated in South America in accordance with the company's policy of playing a full part in furthering British export trade.

**Hints to Business Men Visiting Iraq.** The Department of Overseas Trade. London. 1945. 8½ in. × 5½ in. 20 pp.—This booklet is one of the latest additions to the series issued by the Department of Overseas Trade for the benefit of representatives of United Kingdom exporters. The publication contains useful information on Iraq, including climatic conditions, travel facilities and trading opportunities.



## The Scrap Heap

A railway porter lives in a prefabricated house. His comrades at the railway station have been amazed to notice how gently he slams the carriage doors.—From "Charivaria" in "Punch."



A poster issued by the L.P.T.B. to urge the need for staggered hours

### RAIL SPEED 50 YEARS AGO

In 1895 the *Railroad Gazette* (U.S.A.) recorded that the time made on April 21 of that year by the newspaper train from Camden, New Jersey, to Atlantic City, 58.3 miles, was 45½ min., an average rate of 76.46 m.p.h.

### LOST FOUNDATION STONE?

Plans for the rebuilding of Euston Station are again being prepared. They are not so ambitious, however, as those which the late Lord Stamp had at heart.

In 1937 the foundation stone for the new station was selected at the Caldron Low quarry in Derbyshire. There was a ceremony at the quarry and Lord Stamp

made a speech which was relayed from his office at Euston. Then he pressed a button on his table to explode the charge which released an imposing mass of material from which the stone was afterwards prepared. The uncertain international outlook prevented the plans from being put into effect. Now, I am credibly informed, no one knows where the foundation stone is.—From "Peterborough" in "The Daily Telegraph."

### "BANDMASTER OF THE N.E.R."

In announcing that Mr. L. Ballan, District Goods Manager, Hull, L.N.E.R., had been to an Investiture to receive his O.B.E., *The Yorkshire Post* described him as District Gas Inspector, Hull. Luckily, Mr. Ballan has a sense of humour. The blunder reminds us of an announcement in the *Northern Daily Mail*, the evening paper of the Hartlepoons. Mr. R. C. Mayes was the first Yardmaster at the port when Sir George Gibb reorganised the traffic departments in 1902. The *Mail* solemnly recorded that Mr. R. C. Mayes had been appointed Bandmaster of the North Eastern Railway!

### 100 YEARS AGO

From THE RAILWAY TIMES, July 12, 1845.

**CITY AND WEST-END RAILWAY AND TERRACE COMPANY**, for the Union and Extension of the Metropolitan Termini of the London and Birmingham, Great Western, and West London Railways, along the north bank of the river Thames to Southwark-bridge, and for the construction of grand terraces or esplanades on parts of the line, with a reserve for further extension. (Provisionally Registered pursuant to Act 7 and 8 Victoria, c. 110). Offices, 32, Foultry, London; CAPITAL, £1,500,000, in 60,000 shares of £25 each; DEPOSIT, £1.7s. 6d. per share; the preliminary expenses not to exceed 5s. per share, without the sanction of a general meeting of the shareholders.

### PROVISIONAL DIRECTORS.

Colonel Campbell Dalrymple, Great George-street, Westminster  
Sir Thomas Banks, Bart., F.R.S., &c.  
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William D. Bruce, Esq., F.S.A., Charles street, St. James's  
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Major Kortright, Great Cornam-street  
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Major R. Leslie B. Dundas, Blair Castle, Perthshire, and Charles-street, St. James's  
Thomas Newton, Esq., Harley-street  
With power to add to their number.

ENGINEERS—Robert Stephenson, Esq.; George Parker Bidder, Esq.  
ARCHITECT AND SURVEYOR—William Laxton, Esq.  
BANKERS—Sir Claude Scott, Bart., and Co.; Messrs. Denison, Heywood, Kennards, and Co.  
SOLICITOR—John Foster, Esq., 66, Jernyn-street, St. James's  
SECRETARY—Mr. Hodgson.

### RAILWAY QUESTIONS AND ANSWERS

**Statement:** If all railways were State-owned, greater use could be made of the underworked trunk and branch routes, so avoiding traffic congestion on main lines. Witness the overcrowding of some London termini compared with the comparative lack of congestion of others.

**Answer:** It would be poor satisfaction to traders to be told that their goods had taken three weeks to deliver because they had had to be sent by the underworked branch railway lines. That, however, is what, according to the criticism, would happen if the railways were State-owned. What is meant by an underworked branch line? Surely it is all a matter of comparison. Compared with the main line which passes a train every ten minutes, the branch line which has five trains a day is underworked. But the five-trains-a-day line which is condemned as underworked is a hive of activity compared with a smaller branch line which has one train a day each way. There is no end to this argument. The fact is that to send a train via any line which is not the most convenient route is bad railway operation. To do so just to employ lesser-used routes would be uneconomical, for extra staff would be required and a higher degree of maintenance would be needed on these lines. And to achieve what result? So that you can take twice as long sending a consignment of goods between points A and B by despatching them all round the mulberry bush. The fact is, of course, that no scheme of State ownership can alter the natural flow of traffic, either of passengers or of freight. The railways endeavour to use all their lines to capacity, but the public is the buyer; the public decides where it wants to live; where it wants to go, and how it wants its goods distributed. The railways use their lines and operate services to meet public demand. It is the public—passenger or trader—who in reality decides when trains shall run. The railway companies must and will serve their customers; they wish to do so, apart from it being a public obligation which they have met full.—From "Answers to Questions and Statements," issued by the British Main-Line Railway Companies, 22, Palace Chambers, London, S.W.1.

### P.S. & N.W.R.

In the *Engineer*, January 20, 1871, there appeared this advertisement:—

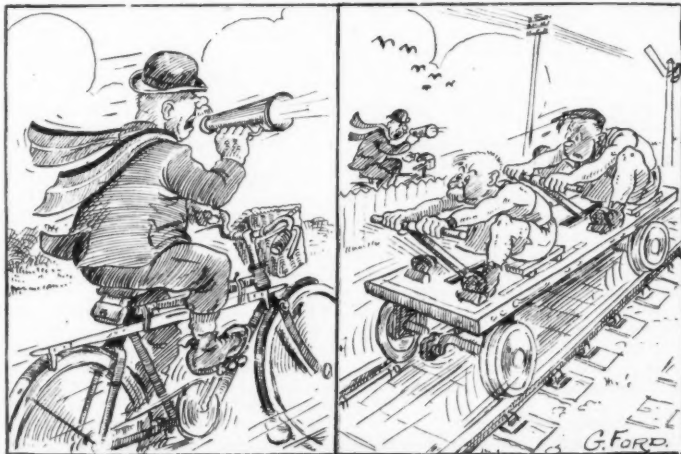
On sale, six wrought-iron girders, two 62 ft. long and four 41 ft. long; also complete ironwork for two engine turntables (Midland Railway Company's pattern). The girders were constructed for a railway viaduct over a river, and are substantially built.

For prices, etc., apply to J. Bucknall Cooper, Shrewsbury.

Mr. J. Bucknall Cooper was the Manager of the Potteries, Shrewsbury & North Wales Railway, and the girders referred to formed the north side of the Severn Bridge at Shrawardine; the turntables were those at Llanymynech and Shrewsbury (Abbey). Neither the girders nor the turntables were sold, and to this day the two large girders span the central piers on the north side of Shrawardine Bridge. The four small girders were used by the late Colonel Stephens for the new bridge across the river at Melverley during the reconstruction of the Criggon branch between 1910 and 1912.

It is not at present clear whether double track was ever laid across the bridge at Shrawardine. The Board of Trade Returns at the end of 1871 show that the P.S. & N.W.R. still had 7 miles of double track. This would probably be the section from Ford to Shrewsbury, but whether to Coleham Junction only, or through to Abbey Station or to North Wales Junction on the Wellington line of the L.N.W.R. & G.W.R. Joint, is not certain. From Ford westwards to Kinnerley and Llanymynech the line was in all probability at first double, but had already been reduced to single by the end of 1871 because of the disastrous financial position in which the company found itself.

The history of the two turntables is rather more vague, but both survived for many years, probably until well into S. & M.R. days; the old pits can still be seen, although that at Llanymynech is very much overgrown.



Training

## OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

### WESTERN AUSTRALIA

#### Repairs to Bridge Damaged by Fire

Recently the railway bridge over the Canning River between Maddington and Gosnells was partially destroyed by fire. The bridge, an all-timber structure exceeding 300 ft. in length, carries the main Perth-Bunbury tracks. The fire virtually destroyed more than 100 ft. of superstructure under the "up" line and burnt out a supporting pier under the "down" track, rendering both roads unusable.

Engineers and maintenance inspectors were at the scene promptly, and plans for repair work were under way before the fire was subdued. Temporary repairs to the "down" line were completed in 10 hours, and this was immediately brought into use to carry traffic in both directions.

The restoration of the structure under the "up" road was a much larger proposition, necessitating the complete reconstruction of seven 15-ft. spans of bridge top from the piles upwards. The stripping of the charred timbers was in itself a considerable task.

The whole of the work involved was completed in less than a fortnight, and the badly damaged "up" portion slightly more than a week from the commencement of repairs on the section. Only 12 men were engaged on the actual bridge repair work, but others contributed to the rapid completion of the work. The railway sawmills provided the outsize timbers required within four days of the issue of the order.

#### Mixed Trains

In a recent statement to the press concerning mixed trains and the reasons for running them, the Commissioner of Railways said such trains were not popular with the travelling public and were a source of annoyance to the railway management, but economic considerations and the geographical lay-out of the railway system in Western Australia had hitherto made them necessary. He said that, on account of the sparse population of parts of the State, there was not the demand for travel, particularly on branch lines, to warrant running heavy steam trains for passengers independently of goods trains; and that, with insufficient light units to cater for the passenger side, they were forced to do the next best and combine the services. Delays in shunting at stations and sidings *en route* were irksome to passengers, but settlers were dependent on the trains for their supplies and for the transport of their products, and the prompt and regular delivery of perishables and foodstuffs was to them of far greater importance than the saving of an hour or two on their infrequent trips to and from the city.

In the further course of his statement, the Commissioner said that, to meet the needs of changing times some years ago a small fleet of diesel-electric railcars and trailers had been installed as a step towards a solution of the passenger-travel problem on country lines. They had given wonderful service, and had been responsible for speeding up the journey to and from many country centres. Unfortunately, they had only six of them, and their carrying capacity was limited. Railcars of a larger and more powerful type had been on order from England for some time, but it was doubtful whether they would be available until after the war; and until those additional units arrived it would not be possible entirely to dispense with mixed trains. Progressive elimination of the latter was, however, the Department's aim, and ways and means of

getting even greater mileage out of the existing diesel-electric cars, and otherwise of improving country services, were being actively explored. Materials and manpower however, represented formidable problems, and improvement must necessarily be gradual until further rolling stock was available.

### SOUTH AFRICA

#### 1945-1946 Estimates

On the East London-Springfontein main line, new works in progress will need £248,968 this year. The work consists mainly of deviations and regrading, and up to March 31 of this year £1,687,441 had been spent out of a total estimated at £3,608,951. In the harbour area of East London (Buffalo Harbour), it is intended to improve the distribution system at a cost of £42,409 and in the current year £10,409 will be spent on this work. The railway workshops at East London are estimated to cost £888,000 and £5,000 will be asked for this year.

The graving dock under construction at Buffalo Harbour is estimated to cost £1,584,700 of which amount £606,160 has been spent. For the current year a further £550,000 will be voted. The station buildings at East London are estimated to cost £32,346, but no provision is made to start the work in the current financial year.

#### Aerodromes

The railway estimates for 1945-46 include a sum of £500,000 to be spent this year on the Union's three major aerodromes.

The site of the Cape Town aerodrome lies off the northern side of the national road running from Mowbray to Faure at a point five miles south-west of Bellville and about 12 miles from the Cape Town General Post Office. A superficial area of 1,980 acres has been set aside. The temporary international aerodrome at Palmietfontein, near Johannesburg, will have £105,000 spent on it this year to complete the work.

### UNITED STATES

#### Opening Out Southern Pacific Tunnels

For some years the Southern Pacific has been carrying out a systematic policy of eliminating tunnels, either by opening out or by relocation work. Most of these tunnels have had a restrictive effect on motive-power development, because of scant clearances; and it is the present availability of soil-moving equipment of various kinds which has made the operations possible.

Six tunnels have been opened out on the San Joaquin Valley main line between San Francisco and Los Angeles, one on the coast route between the same cities, and one on the Sacramento Division main line; four remain to be dealt with. The San Joaquin Valley line originally had 26 tunnels, all located in two short sections of line, one through the Tehachapi mountains, and the other along the Soledad canyon of the Santa Clara River. When built in 1876, the tunnels were lined with timber; some have been enlarged to new standard clearances and lined with concrete, and by 1942 only six restrictive tunnels remained, along one stretch of 16 miles in Soledad canyon between Russ and Saugus, California.

#### Equipment Used

The work of opening out has been carried out by the Southern Pacific's own labour and equipment. At the start two 12-cu. yd.

capacity machines were the only carryalls out of eleven owned by the company which were considered large enough for the job; each was drawn by a 95-h.p. caterpillar tractor; two 54-h.p. tractors, both equipped with bulldozer blades, were also in use. One of the latter pulled a roofer and pushed the carryalls while loading, and the other was used for shaping and spreading work. Later, this equipment was increased by two larger 18-cu. yd. carryalls, and later still by a 24-cu. yd. carryall; three complete bulldozer outfits are available also, together with seven 95-h.p. and one 54-h.p. caterpillar tractors, a roofer, a sheep's foot roller, a wheel-mounted air compressor, a petrol-driven centrifugal pump, a sprinkling outfit, and 32 dump wagons for road use of from 2½ to 10 cu. yd. capacity. A gang of twelve men, with an assistant engineer in charge, carries out the whole of the work at each site. The longest tunnel so opened out was one of 238 yd. and the work involved the removal of 174,350 cu. yd. of soil.

### CANADA

#### C.N.R. Purchases

The largest purchaser of Canadian materials was the Canadian National Railways system, Mr. O. A. Trudeau, General Passenger Agent, Montreal, C.N.R., stated in the course of a recent address. Eight thousand Canadian firms, spread all over the country, shared in the distribution of orders for about 50,000 items. Mr. Trudeau pointed out that from the beginning of the war until the end of 1944 the C.N.R. had used, among other supplies, 36,222,720 tons of coal; 286,142,708 gallons of oil; 712,000,000 ft. of lumber; 9,303,098 cubic yards of ballast; and 659,081 cast-iron wheels. C.N.R. dining cars had served 21,330,337 meals during the same period; in that connection the largest purchases had been 7,788,024 lb. of meat, 2,214,212 lb. of poultry, and 2,109,400 loaves of bread.

### PORTUGAL

#### Beira Alta Railway

The Beira Alta Railway, which is of the Portuguese standard (5 ft. 6 in.) gauge and operates some 157 miles of route, recently requested the authorities to agree to new articles of association. This step was consequent on special meetings of shareholders and bondholders at which they consented to a reconstruction, to bring the company once more within the normal commercial law and replace the conditions imposed on it in 1907, after the difficulties it had met in the previous year, when a composition with creditors had had to be made. The Minister of Public Works and others interested agreed to the new arrangements, and the company accordingly was reconstituted last March.

### SWEDEN

#### Development of Air Traffic

Aktiebolaget Aerotransport (ABA), the Swedish national air traffic company, which operates a daily service between the United Kingdom and Stockholm, plans to extend its activities over the main European countries. The company's pre-war service between Stockholm and Paris probably will be resumed early in July, and this line may be extended to Switzerland if negotiations for a direct air service between Sweden and Switzerland across Germany should fail. In addition, the Swedish-Intercontinental Luft Aktiebolaget (SILA) in which the ABA participates, is to open its direct service between Sweden and the United States shortly.



## Recent Signalling Developments—5\*

*Pre-war progress in Great Britain, with some indication of how the latest technical developments might be applied to post-war traffic problems*

By O. S. Nock, B.Sc., A.M.Inst.C.E., M.I.Mech.E., M.I.R.S.E.

SO far in this series of articles consideration has been given to goods traffic that is actually on the move. The provision of improved signalling at junctions, and on critical sections of line enables a peak density of service to be dealt with more expeditiously, but, to preserve an even flow throughout the whole system, the goods terminals and marshalling yards also must be able to absorb such peaks. Although the very first example in this country of electro-pneumatic operation of points and signals was at Bishopsgate Goods Station, on the former Great Eastern Railway, modern signalling practice has so far had little or no part to play in the working of goods terminals, as the major problems therein concern the handling of merchandise rather than the movements of trains and individual wagons. But in the operation of marshalling yards some of the underlying principles of modern power signalling have been applied in mechanisation schemes carried out before the outbreak of war.

In the design of a full-mechanised marshalling yard three quite dissimilar facets of railway operating have to be considered:—

- Layout and gradients of the permanent way;
- Running qualities of freight wagons;
- The operation of the points.

All three are closely related, and the design of the sections (a) and (c) cannot be finally decided on without careful reference, in each case, to the other two factors of the trio. The objects of hump yard mechanisation are to accelerate the working, to save manpower, and reduce to a minimum the damage caused to merchandise and rolling stock through the violent impacting of the wagon buffers. Considering first factors (a) and (b), the gradients leading from the crest of the hump to the reception sidings are designed so that they will carry a bad-running wagon to the end of the particular siding into which it is switched. The first section of the descent from the hump is made steep, so as to separate one wagon or cut from the next by a sufficient interval to enable the first pair of diverging points to be thrown between successive cuts. (A "cut" is the term used for a group of wagons coupled together). Beyond the first pair of diverging points the gradients flatten out.

### Running Resistance of Wagons

There are wide variations in the running qualities of different wagons. In designing the gradients it is necessary to legislate for the bad-running wagons; otherwise a lot of time would be spent after humping in pushing wagons down the sidings to buffer them up to vehicles already there. Railbrakes are installed to retard the free-running wagons to a speed sufficient to carry them only as far as the particular siding is unoccupied. Tests on

British railways have shown that the running resistance of a wagon may be anything between 5 and 20 lb. per ton, at speeds in the 10-20 m.p.h. range, and even in the comparatively short distance between the crest of the hump and the first diverging points, this difference in running resistance shows itself in considerable variation in the intervals between successive cuts. In the case of a bad runner followed by a free runner the interval may be very short indeed, and automatically-controlled point operation becomes essential.

There is a further aspect of the yard layout that affects the point operation. So that running resistance due to the curvature of the track may be approximately the same on all routes leading from the hump, it is usual in fully-mechanised yards for the roads to be laid out on what is termed the "balloon" system. This also happens to be very convenient for point operation, as all the point layouts

humping of a train begins, the man in charge of point operation is given what is termed a "cut card," a list of all the cuts together with their destination; in others the siding to which a particular cut is to be sent is chalked prominently on the front of the first wagon of the cut. When humping starts the operator, noting the route of the first cut either from a cut card or from the figures chalked on the leading wagon, sets up the first route required by pressing the appropriate button. The cut rapidly accelerates down the steep gradient leading from the hump, leaving a considerable distance between its rearmost wagon and the first of the second cut.

Although the operator has before him on the cut card, or can see on the approaching wagon the destination of the second cut, he cannot set up the second route until the first cut has passed over the first pair of diverging points, termed the "king" points, and entered the "king" track circuit. The distance between successive cuts allows only a very limited time for setting up the route for the next cut, and even in conditions of good visibility it would be difficult for the operator to judge the correct time without some electrical indication. Actually, the moment one cut passes clear of the king track, a green lamp on the control desk is illuminated, signifying "next route clear," and simultaneously a buzzer

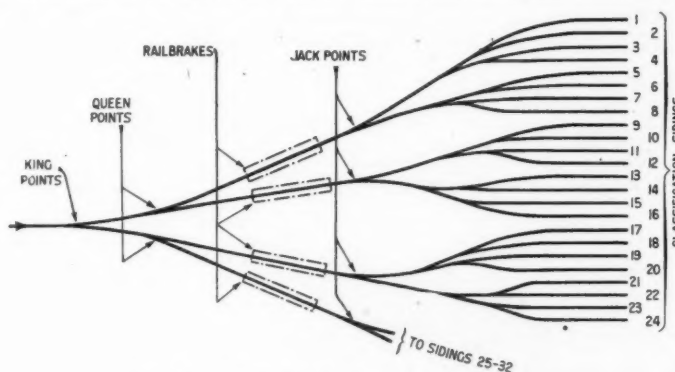


Fig. 17—Typical layout of a mechanised yard

are grouped together near the foot of the hump, and the passage of wagons over them can be observed readily from the operating room of the control tower. In the yard at Hull the complete route from the hump to each of the thirty sidings is set up by the pressing of a single push-button; there is a separate push-button for each of the routes. As successive cuts follow each other very rapidly down the hump, the first cut will not have travelled far along its route before it will be necessary to set up the route for the second. It may happen often that the route of the second cut may be the same as that of the first for part of the distance, to siding 23 in Fig. 17 for example, following a cut to siding 20. The actual operation of the points obviously cannot be carried out until the first cut is clear. Thus the route must be "stored," in much the same way as the control and indication codes in a C.T.C. installation are stored, until the line wires are clear and the code can be transmitted.

### Methods of Power Point Operation

The details of working vary somewhat in different yards. In some cases, before

is sounded, momentarily. As soon as he receives this two-fold indication, the operator presses the button to set up the route for the next cut. This action extinguishes the green light. If the route so requires it the king points will be thrown at once; the rest of the route is stored, by means of a system of progressive relays, and the successive pairs of points thrown, if required, when the preceding cut has passed clear. In the ordinary way the operator can thus concentrate his whole attention on the wagons descending the hump.

Toton down yard, L.M.S.R., provides the most recent example of the second method of point setting. An earlier case of the same system is that of the down yard at Whitmoor, March; in this latter case the storage of routes for automatic point setting is carried out by means of instruments similar to magazine train describers. The layout of tracks at Toton is similar to that at Hull, though the working is divided between a small control cabin at the crest of the hump, known as the Hump Room, and the Control Tower proper, which is located abreast of the third set of diverging

\* Part 1 appeared in our May 18 issue, Part 2 in our June 1 issue, Part 3 in our June 15 issue, and Part 4 in our June 29 issue

points. The operator in the Hump Room has before him a panel equipped with 35 push-buttons, numbered to correspond with the sidings in the yard.

As a train is propelled over the hump this operator observes the siding number

It will be appreciated that a second, and maybe a third cut will pass the Hump Room before the first has even reached the king points; but the routes required for each are electrically stored when the appropriate buttons are pressed, and duly

button. The operator in the Toton Control Tower thus has a different task to perform to the point operator at Hull. At Toton he is only concerned with wagons after they have passed the jack points; he has 19 sets of points to operate, 4 of which are three-way. By the time they pass the jack points, however, the "cuts" are well spaced out, and with an excellent look-out from the cabin no difficulty in working has been experienced. Under peacetime operating conditions as many as 1,600 wagons could be humped in a normal eight-hour shift, which is equivalent to one wagon over the hump every eighteen seconds throughout the shift. As an example of the speed with which individual trains are humped, a train of 60 four-wheel wagons, divided into 45 cuts, was disposed of in exactly 10 minutes; this is the time between the passage of the first and last vehicles over the hump. In this particular yard 60 wagons represents an average train of coal empties, and between three and four such trains, under pre-war operating conditions, were humped every hour.

This rate of flow is approximately double the best that could be expected in a non-mechanised hump yard. At Toton the speed at which wagons are propelled over the hump is actually less than that maintained in a typical non-mechanised layout, but the non-effective time is so reduced as to yield this greatly superior performance as a whole. In non-mechanised yards many of the wagons do not run to the full extent of the space available in the various sidings, and after each train has been humped the propelling locomotive is employed pushing cuts down the roads to buffer them up to the wagons already there. As much as 30 per cent. of the whole working day may be spent on this work alone. In a mechanised yard equipped with railbrakes an expert



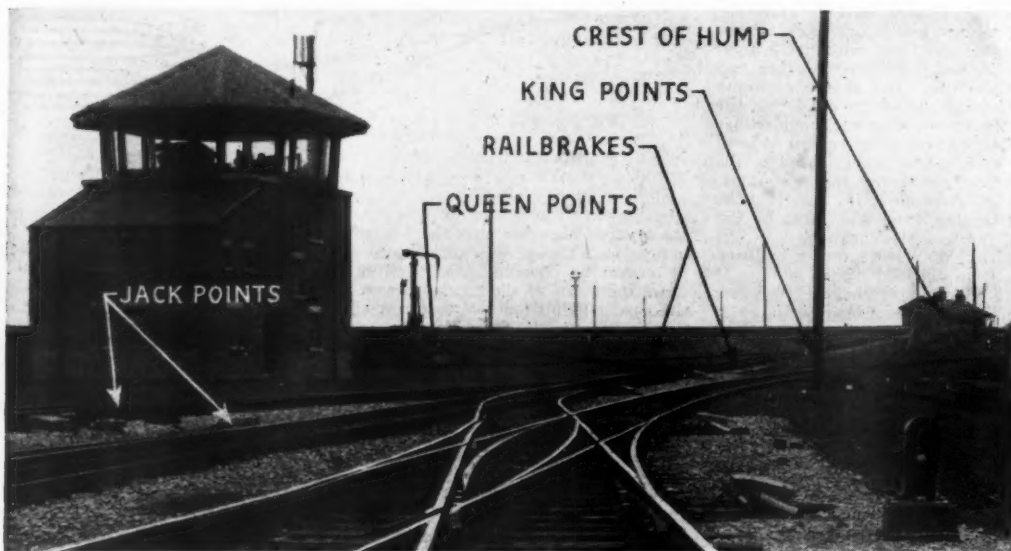
*View from control tower, showing railbrake control panel and, outside, a wagon passing through one of the railbrakes*

chalked on the first wagon of each cut, and presses the appropriate siding button as the cut passes the Hump Room. This action, through a system of relays, pre-sets the route required, though only over the first three pairs of points. Referring

set up when the preceding cut is clear.

#### **Traffic Flow Through Mechanised Yards**

The remainder of the points in the yard are operated by individual thumb-switches



*View of a hump yard showing control tower and, in the foreground, electric points and ground light signal for controlling light engine movements*

again to Fig. 17, the first diverging points are known as the "king" points, the second set as the "queen" points, and the third as the "jack" points. It is over these three sets that the interval between successive cuts is shorter and where it is essential to have automatic point setting.

from a panel in the Control Tower. The point operator here, naturally, requires to know the route of each cut, and he is given this information on a moving paper band; the siding number is teleprinted in type on this paper when the operator in the Hump Room presses the siding

brakesman will so regulate the speed of cuts as to make this pushing down practically unnecessary under normal operating conditions. Similarly, with the point operation: because of the wide variation in running characteristics of different wagons it may happen that a free-running



cut follows a bad runner; with only hand braking the second cut might not be sufficiently far behind the first for hand operation of the points to be carried out, with the result that the second cut would be switched into the wrong siding. This would have to be corrected afterwards, and while such work was in progress normal humping would be suspended. Quite apart from the operational advantage to be derived from complete mechanisation of hump yards, an important saving in manpower can be realised, and the hazardous job of the brakesman in riding on the wagons eliminated.

Even the rapid handling of wagons in a modern hump yard, as exemplified by the working at Whitmoor, Hull and Toton, is not sufficiently fast to keep pace with the minimum headway possible on a section of line equipped with multiple-aspect signalling. In the third article of

adequate reception-siding accommodation. Technically, there is no reason why operations in the yard itself could not be speeded up, to a certain extent, the better to meet such peaks of traffic; but increased speed of humping increases also the chances of damage to wagons and freight alike, and providing the maximum daily capacity of the yard is able comfortably to cope with the average daily flow of wagons, there is no point in quickening the actual humping operations.

In fully-mechanised hump yards the time available for throwing the points is very limited, particularly in the case of the king and queen points, and special measures have been taken to secure the quickest possible response of the apparatus to the electrical controls. The points are not bolted, and in the case of Hull they are thrown by electro-pneu-



Fig. 18—Approach to a mechanised yard

this series train working on a busy main line was discussed, and one class of traffic to be operated was heavy mineral, to be interspersed when convenient among a variety of faster services. In regulating the flow on such a line, Control would take advantage of the considerable intervals between the groups of express passenger and fast freight trains to work through the slower and heavier grades of goods and mineral trains, and at times these would run to the minimum headway possible. Fig. 18 illustrates the track layout approaching a large marshalling yard.

In accordance with the example discussed in the third article of this series the main line is double-track, changing to quadruple 7 miles from the large centre where the marshalling yard is located. The multiple-aspect colour-light signals are spaced approximately one mile apart, and with these heavy loose-coupled mineral trains running at 20 to 25 m.p.h., the minimum headway would be 7-8 minutes. Thus for half-an-hour or so the rate of arrival would be approximately double the rate of humping, and to absorb immediately such a peak density of traffic, and keep the main running lines clear it would be necessary to provide

automatic cylinders having the piston rods coupled directly to the stretcher bar. The track circuits are normally de-energised. Direct-current track relays pick up much quicker than they release, and by using this characteristic, energising the track circuit when a wagon enters, the electrical controls dependent on the movements of wagons in the yard can be initiated quicker than if normally-energised track circuits were used and controls initiated by the dropping away of the track relay.

#### A.T.C. in the Future

With any present-day signalling project, the question of providing for the addition, sooner or later, of some form of automatic train-control has always to be considered, and so, in conclusion, a few notes are added on this subject. The only systems of A.T.C. to pass beyond the experimental stage in this country so far have included intermittent control, based entirely on the indication displayed by the distant signal. But in this series of articles a gradual extension of multiple-aspect colour-light signalling has been envisaged, with which it is difficult to apply a two-indication system of automatic train-control. At the present time it is

generally considered that multiple-aspect colour-light signalling provides a markedly increased safeguard against the possibility of signals being misread, particularly in thick weather, so much so that the installation of such signals has come to be considered as an alternative to using a system of intermittent A.T.C., which would operate in conjunction with the existing manual block signalling. If, at the same time as multiple-aspect signals are installed, the line is equipped with coded track-circuits, the basis is provided for the addition of continuous inductive-cab signalling, if and when operating conditions render such an addition necessary.

Whether an agreed policy for the future can be arrived at remains to be seen. The problem certainly offers no easy solution. There are many long stretches of line where the density of traffic would not appear to justify a change to continuous track-circuiting, and the installation of multi-aspect colour-light signals; yet on these stretches the scheduled speed of individual trains, and the importance of the traffic generally, make it desirable to add some form of cab signalling, with perhaps intermittent A.T.C. to permit of punctual working, and, of course, greatly increased safety, in conditions of bad visibility. On other sections, where the volume of traffic, and the variation in running speeds, was apt to cause congestion, the introduction of multi-aspect colour-light signals already has provided a satisfactory solution. So far as cab signalling is concerned, the problem to be considered is whether the ultimate aim is to be the adoption on all main lines of a continuous inductive system, which can repeat in the locomotive cab the indications displayed by multiple-aspect wayside signals, or whether the use of the two-indication intermittent-warning system, as installed over the entire main-line network of the Great Western Railway, and designed for use in manual block territory, is to be extended.

One thing is certain: the period of reconstruction after the war affords an opportunity that may never occur again for the preparation and carrying out of an agreed plan of signalling modernisation. The provision of cab signalling, with or without automatic train control, should form an integral part of such a scheme. Apart from increased safety, and the better regulation of traffic through improved control methods, the general use of cab signalling should largely eliminate fog as a cause of delays, and so contribute greatly towards the general improvement of train operation.

(Concluded)

**HOFFMANN MANUFACTURING CO. LTD.**—In the course of his address at the annual general meeting of the Hoffmann Manufacturing Co. Ltd. on June 21, Mr. E. Hugh Armitage, the Chairman, said that in war, as it was in peace, there was hardly any mechanism in which Hoffmann bearings had not played their part. As a result of enemy action at Chelmsford on more than one occasion 38 employees had lost their lives and many were injured. The behaviour of all employees during and after these attacks was excellent, and reconstruction work was undertaken immediately. The fall in turnover during last year caused by an increasing shortage of labour and by the incessant strain of work under bombing conditions resulted in trading profits falling suddenly and sharply. It was the intention of the company to do everything possible to

satisfy the demand from the home market, the dominions and the colonies, and to help in the rehabilitation of the industries of the allies. He hoped that it might be possible to capture some of the markets previously enjoyed by the bearing industry of enemy countries. The directors were planning to extend the application of their products to industries that had not yet made full use of their advantages.

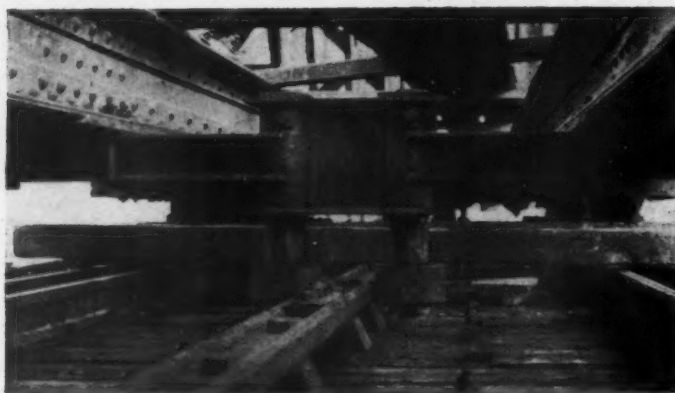
**CROMPTON PARKINSON LIMITED.**—As from July 1, 1945, the three companies acquired by Crompton Parkinson Limited in 1941, the Young Accumulator Co. Ltd., A. E. Morrison & Sons Ltd., and Electricars Limited, will cease to function as separate sales entities and will be merged into the Crompton Parkinson organisation. Orders

outstanding and not invoiced at June 30, 1945, are to be executed by Crompton Parkinson Limited, which will render invoices and accounts. The brand names under which the products have been sold previously—"Young," "Morrison-Electricar" and "Electricar"—will be retained.

**SWEDISH-POLISH TRADE AGREEMENT.**—Under an agreement for an exchange of goods between Sweden and Poland, Sweden is to deliver to Poland, within the next five months, a variety of heavy engineering equipment, including railway carriages. The Swedish authorities also envisage hiring to Poland a number of railway wagons to be used for the delivery of the Polish coal and coke to Sweden, which forms the other part of the exchange agreement.

## Chappar Rift Bridge Dismantled

*A description of the removal of the 155-ft. span of the Louise Margaret Bridge, over the rift, Sind-Pishin section, North Western Railway (India)*



*The centre guide rail and a pair of guide wheels below one of the welded beams*

**A** DESCRIPTION of the dismantling of the 155-ft. span of the Kachh High Bridge on the Sind-Pishin line was given in *The Railway Gazette* of May 5, 1944, and this article now describes how a similar span was removed from the famous Louise Margaret Bridge which carried this single line of broad-gauge railway over the Chappar Rift.

The Sind-Pishin line (known in its infancy as the Khandahar State Railway) forms part of the North Western Railway. Constructed between 1883 and 1887, this, the first frontier line in India, was considered as one of the most daring railway constructions in the world, and the section which passed through the Chappar Rift was regarded as the most remarkable. At the lower end of the rift, the line from Sibi, emerging from a tunnel in the perpendicular rock wall, crossed the ravine on the Louise Margaret Bridge and immediately entered another tunnel on the other side. The bridge consisted of seven 40-ft. deck-type plate-girder spans, at the Sibi end, and one 155-ft. through-type single-system Warren-truss girder span, which carried the rails 230 ft. above the bed of the rift; all the girders were of wrought iron. The bridge was opened by H.R.H. Princess Louise Margaret, Duchess of Connaught, on March 27, 1887.

The problem of removing the 155-ft. span was very much more difficult than had been the case at Kachh High Bridge because, in the Chappar Rift, the line was laid on a gradient of 1 in 45 up from the Sibi end, and the seven approach spans with their stone masonry piers were constructed to suit a reverse (S-shaped) curve. Besides, the site was very cramped, with only a 60-ft. approach on a narrow ledge between the tunnel and the abutment of the first 40-ft. span. The railway had been breached further on in the rift, so the dismantling had to be carried out towards the Sibi or lower end of the bridge. Any proposal to withdraw the 155-ft. span on to the far abutment was out of the question, and it, therefore, had to be drawn back over the 40-ft. approach spans.

Obviously, the 155-ft. span could not be rolled back in its entirety—as the

Kachh span was—for the large girders were spaced at 16-ft. centres, whereas the plate girders of the approach spans were only at 5-ft. 9-in. centres and most of the piers supporting them were correspondingly narrow. Fortunately, however, the stone masonry piers under the sixth and seventh approach spans had been built considerably wider than the others; no doubt, they were so constructed to facilitate the placing of temporary gear when the big span was erected some 60 years ago. By taking advantage of these wider piers, and slewing the 40-ft. girders to a slight skew, it was just possible to build straight roller paths 90 ft. long. After the decking had been removed by crane, the girders of the big span were then skidded inwards to 6 ft. 7-in. centres and also slewed to a slight skew, so as to bring them into line with the roller paths. By steepening the grade up the first five 40-ft. spans, it was possible to pack up the sixth and seventh spans so that the roller paths were level. Six girders were used in each of these two 40-ft. spans to strengthen them to carry the very heavy loads imposed on the roller paths.

To roll back the ten-panel 155-ft. girders, eight-panel lengths of two other similar 155-ft. girders were first erected as a counterweight on the approach spans. Then two 40-ft. girders were erected as vertical struts above the junction between the 155-ft. girders and these counterweight girders, and suspension chains were attached to the tops of the struts and to points near the centres of the 155-ft. girders on the one hand, and, on the other, to points equidistant from the struts along the tops of the counterweight girders. By the addition of the counterweight girders, the length of the continuous girders to be rolled back was 279 ft., of which 155 ft. were over the ravine. It was not possible to increase the length of the counterweight girders to 10 panels because of the curve on the approach spans; so, to bring the centre of gravity of the whole mass over the roller path, 57 tons of kentledge (discarded cross girders, stringers, and rails) were placed on the two rear panels of the counterweight girders.

The details of the 6-in. diameter steel

rollers and the pairs of flat-footed rails used for the roller paths were precisely the same as at Kachh. In this instance, however, the roller paths were at 6 ft. 7-in. centres instead of 16 ft. It was realised that the great length (279 ft.) of the girders being rolled back on the comparatively short (90-ft.) length of the roller paths might lead to a serious lateral wandering of the girders off the roller paths, especially as the rift is a very windy place. At Kachh, any tendency of the girders to get out of line during the rolling back was easily countered by the use of hemp-rope guys applied at the nose of the cantilever, and by the application of jacks at the rear of the counterweight girders. At the Chappar Rift, however, the height of the bridge precluded the use of guys, and there was nothing to apply lateral jacking force against on the narrow approach spans beneath the tail end of the counterweight girders. So a somewhat novel expedient was adopted. A 68-lb. double-headed guide rail, laid on its side, 4½ in. above the transverse bridge timbers, and bolted down on cast-iron blocks at intervals of 2 ft. 6 in., was fitted centrally between the roller paths over the sixth and seventh 40-ft. spans.

On the underside of the triangulated girders, to be rolled back, a series of specially welded mild-steel girders were bolted athwart and below the bottom chords. These welded girders were located 15 ft. 6 in. apart at each panel point above the roller paths and under the cantilever part of the triangulated girders. Near the middle of each welded girder, two axles protruded downwards, and on these were fitted 8-in. dia. cast-iron wheels, arranged to bear against the heads of the centre guide rail. By the use of this guiding arrangement, the girders were kept immediately over the roller paths during the whole of the withdrawing operation. As a further precaution against any risk of the wind on the nose of the cantilever taking charge and levering round the kentledge end of the girders, guide rail, and complete approach spans, the girders of the sixth and seventh spans were fixed down to the piers by bolts grouted into the masonry.

The weight of the girders and kentledge being rolled back was about 275 tons. The power for pulling them back came from two six-ton hand winches anchored behind the abutment. Steel wire ropes from the drums were led round two- and three-sheaf pulleys, and the speed of rolling back averaged 4 to 5 in. a minute.

After the first stage in rolling back had been completed and the girders had been withdrawn a distance of 46 ft. 6 in. (i.e., three panel lengths), the kentledge and the two rear panels of the counterweight girders were removed, piece by piece, by a 14-ton steam crane. Then, the girders were rolled back another 46 ft. 6 in., by which time the original 155-ft. girders were more than halfway back over the seventh pier. The rest of the work was plain sailing, and the crane removed the kentledge at the back after each successive stage in the rolling back.

The dismantling of the Louise Margaret Bridge was planned and successfully carried out by the staff of the Bridge Branch of the North Western Railway under the direction of Mr. S. M. Johnson, M.C., Deputy Chief Engineer, Bridges. The work occupied about three months, during which the average number of men employed at site was 100. Sardar Harnam Singh, an illiterate Sikh Bridge Inspector, was in charge at site. Safety nets were stretched below the bridge, and there were no casualties among the staff.



## Chappar Rift Bridge Dismantled

(See article on opposite page)



*The 155-ft. span 230 ft. above the bed of the stream, before dismantling*



*The 279-ft. continuous span ready to be withdrawn, with the temporary struts over pier 7*



*After the first stage in the withdrawal of the 155-ft. girders. The temporary struts now above pier 6*

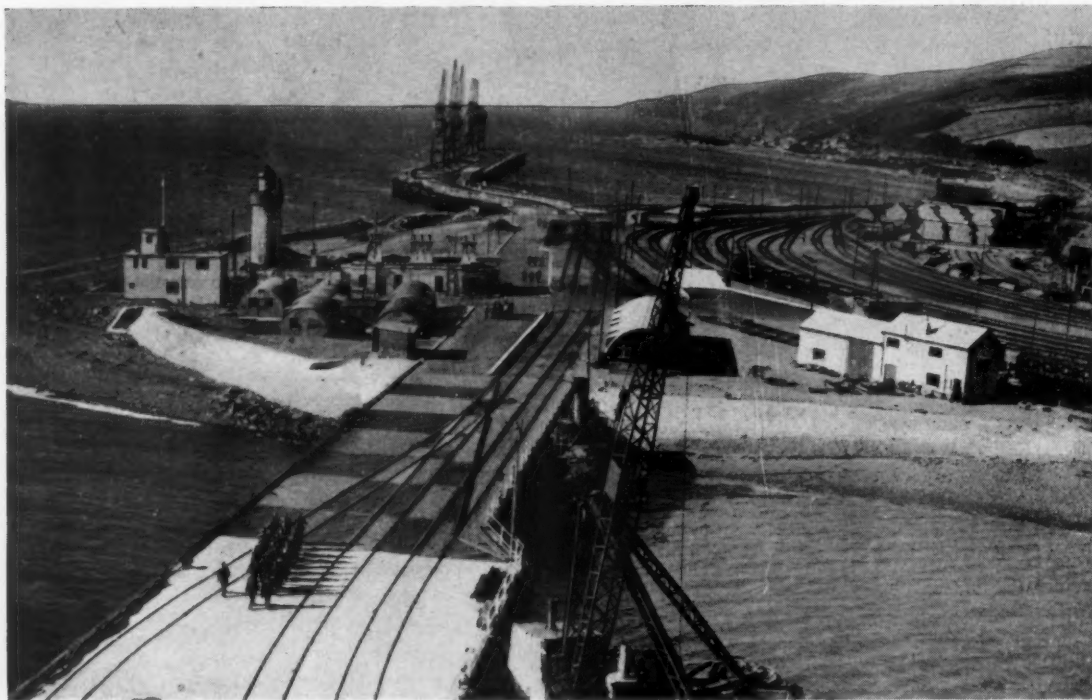


*Another view after the first stage in the withdrawal. Note the clearance between the underside of the tail of the counterweight girders and the steeply-graded approach spans, also tunnel in background*

### Military Ports in West Scotland



*The pier of No. 2 Military Port, Loch Ryan. After the fall of France in 1940 the South and East Coast British ports were virtually closed to large ocean-going ships. Two ports were built on the West Coast of Scotland, one on the Gareloch and one in Cairnryan, Loch Ryan, Wigtownshire*



*The approach to the pier. The ports and their railways connecting with the main lines, were built entirely by Military labour, R.E.s. and the Pioneer Corps. Work began at the end of 1940, and the first ship berthed in July, 1942*

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## RAILWAY NEWS SECTION

## PERSONAL

In recognition of his outstanding contributions to the art and practice of mechanical science, Sir William Stanier, F.R.S., M.I.Mech.E., M.I.Loco.E. (Adviser to the L.M.S.R. on Mechanical Engineering, and Chief Mechanical Engineer of that railway from 1931 to 1944) has been elected an Honorary Member of the American Society of Mechanical Engineers.

Sir William Stanier has accepted an invitation to join the board of H. W. Kearns & Co. Ltd.

Mr. C. S. Robinson, Director-General of Filling Factories since 1941, has been released from the Ministry of Supply to take up duty with the Control Commission for Germany. He was Chairman of I.C.I. (General Chemicals) Limited before being seconded to the Ministry in 1939.

We regret to record the death on June 29, at the age of 54, of Mr. H. W. Clark, M.Inst.C.E., M.Inst.Welding, Assistant Engineer (Bridges & Structures), L.P.T.B.

The National Road Transport Federation announces that Mr. G. W. Quick Smith, Secretary of the Federation, will take over the duties of the late Mr. F. G. Bristow, with the exception of the Directorships of the Traders' Road Transport Association and the Passenger Vehicle Operators' Association, but at the request of the council of the Federation, and by permission of the Road Haulage Association, Mr. Roger W. Sewill, Director of the Road Haulage Association, will act for the Federation as and when occasion demands and common action is needed.

We regret to record the death on July 4, at the age of 85, of Sir William Henry Ellis, G.B.E., D.Eng., M.Inst.C.E., who was Master Cutler of Sheffield, 1914-18; President of the Iron & Steel Institute, 1924-25; President of the Institution of Civil Engineers, 1925-26; and formerly Colonel, Engineer & Railway Staff Corps, R.E. (T.A.).

## PROVISIONAL ORGANISATION FOR EUROPEAN INLAND TRANSPORT

Lt.-Colonel J. H. Gildey has replaced General Charles D. Young as the nominee of the U.S.A. Government on the Executive Board of the Provisional Organisation for European Inland Transport.

This organisation has also made the following appointments at its temporary headquarters in London:—

Secretary-General: J. Kahane.  
Treasurer: A. M. Stuart.  
Director of Railways: E. Desorgher.  
Director of Road Transport: Major J. H. T. Clarke.  
Director of Equipment & Supplies (U.K.): Colonel C. H. W. Edmonds, O.B.E.

Director of Equipment & Supplies (Continent): Commandant H. M. E. Mathé.  
The following appointments apply to the British, French, and U.S.A. military zones on the Continent:—

Deputy Director-General: Major-General C. S. Napier, C.B.E.  
Paris: Director: J. Tuja.  
Brussels: Director: R. L. Devooght.  
The Hague: Director: J. Prins.

Mr. William Malcolm McGregor, O.B.E., Controller of Stores, North Western Railway, India, who, as recorded in our May 18 issue, proceeded on leave, preparatory to retirement, from June 1, was born at Sirsa, in the Punjab, in January, 1889. Mr McGregor was educated at New College, Eastbourne. In 1907 he joined the North Western Railway in a junior capacity on the confidential side of the Stores Branch under Mr. S. A. J. Keatinge, then Chief Storekeeper. A year later he was appointed on probation as Assistant Storekeeper, but at the end of 1908 he was transferred to the Eastern Bengal Railway. In 1914 he became Storekeeper (the designation of a District Controller of Stores at that time). Three years later he was posted to Bombay, where he supervised the shipment of railway

During 1927-28 he was engaged in the Chief General Manager's Office, at Kings Cross, and later in the Goods Manager's Office, York, in connection with container traffic and the extension of the North-Eastern Area motor-lorry fleet. Mr. Arkle was appointed Head of the Works & Docks Section of the District Goods Manager's Office at Hull in 1929, but from September in that year onwards he spent a year on the German State Railway, studying all branches of work in various parts of the country. Thereafter he was employed in the Traffic & Statistical Section of the Divisional General Manager's Office, York, until, in July, 1933, he was promoted to be Assistant District Goods Manager at Newcastle. In October, 1934, he was ap-



Mr. W. M. McGregor  
Controller of Stores, N.W.R., India, 1941-45

material in connection with the war. Mr. McGregor later returned to the Eastern Bengal Railway, with which he remained until 1925, when he was transferred to the East Indian Railway as District Controller of Stores; in 1928 he became Deputy Controller of Stores, and the next year officiated as Controller of Stores, on the same railway. In 1931 he returned to the Eastern Bengal Railway, as Controller of Stores, and in April, 1941, proceeded to the North Western Railway in a similar capacity. For a short time in 1943 he was at Gorakhpur, where he prepared a report making suggestions for improvements in the Stores Department of the Oudh & Tirhut Railway. In 1925 Mr. McGregor wrote two essays on stores matters, and had the distinction of winning the first and second prizes in the Indian Railway Conference Association open competition.

The board of the Dunlop Rubber Co. Ltd. has appointed Sir Clive Baillieu to be Deputy Chairman. He is President of the Federation of British Industries, and a Director of the Midland Bank Limited.

Mr. E. W. Arkle, M.Inst.T., Assistant Divisional General Manager, Southern Area, L.N.E.R., who, as recorded in our June 22 issue, has been appointed Goods Manager, Scottish Area, joined the Scottish Area of the L.N.E.R. in 1923, but was transferred to the North-Eastern Area in 1925. He spent the next two years training in the Sunderland, Darlington, and West Hartlepool Districts.

pointed Assistant District Superintendent at Newcastle, and became District Passenger Manager, Newcastle, in June, 1936. Mr. Arkle was appointed Assistant Goods Manager, North-Eastern Area, in May, 1937, and in March, 1940, he also took over the duties of Assistant Passenger Manager in that area. He was appointed to act as Assistant Divisional General Manager, Southern Area, in January, 1943, and later was confirmed in that position.

Mr. E. G. Garstang, M.Inst.T., District Goods Manager, Manchester, L.M.S.R., who, as recorded in our June 29 issue, is retiring, was born in April, 1885. He joined the Lancashire & Yorkshire Railway in 1905, and was attached to the Chief Traffic Manager's Office. Later he served in the Rates Department, and subsequently on claims and Outdoor Assistant's work. He acted as Agent for various stations. In 1913 Mr. Garstang was appointed Assistant Steamship Manager, Continental Steamers. Later he became Assistant to District Superintendent, Eastern Division, and, subsequently, Central Division. In 1919 he was appointed Docks Superintendent, Wyre Docks, Fleetwood, and seven years later became Steamship & Continental Manager, Goole. He was made District Goods Manager, Bolton, in 1935, and was transferred to Manchester in a similar capacity in 1941. Mr. Garstang is a Fellow of the Permanent Way Institution. During the present war he has acted as Railway

Liaison Officer with the North Western Regional Commissioner, and the North Western Regional Labour Preference Board; Railway Representative, Manchester Port Emergency Committee, and North Western Regional Canal Committee; member of the Railway Traffic Advisory Committee of the Manchester Chambers of Commerce; member of the Lancashire Industrial Development Council; Railway Requisitioning Officer, Manchester Area; Alternating Chairman, North Western Regional Committee for Road & Rail Central Conference; and Railway Liaison Officer for the Air Ministry, Home Office, Mines Department (Petroleum Department), Office of Works, Ministry of Supply, and Ministry of Food. Mr. Garstang is responsible for the adaptation of the standard wagon for the conveyance of air screws, which has been of considerable service during rapid aircraft construction, and the system of elevated coal discharge, an article concerning which appeared in *The Railway Gazette* of June 16, 1944.

Mr. A. E. H. Brown, Assistant Divisional General Manager, Scottish Area, L.N.E.R., who, as recorded in our June 22 issue, has been appointed Assistant Divisional General Manager, Southern Area, was educated at Oundle School. He entered the service of the Great Eastern Railway in the department of the Superintendent of Operation after being demobilised from the Army in 1919. Two years later he was transferred to the Civil Engineer's Department, and in 1923 was detailed to the Divisional General Manager's Office to assist the late Mr. F. V. Russell in the preparation of various schemes for the electrification of suburban and main lines. Mr. Brown was appointed Assistant Yardmaster at Ferme Park in 1931, Assistant Stationmaster, Kings Cross, in 1933, and Deputy Chief Controller, Central Control (Southern Area), in 1935. In 1937 he went to Kings Cross as Assistant to the District Superintendent, and was appointed full Assistant in 1939. He became District Superintendent, Sunderland, in April, 1940, and was made District Superintendent, Newcastle, in 1941. He was



**Mr. A. E. H. Brown**

Appointed Assistant Divisional General Manager, Southern Area, L.N.E.R.

appointed Assistant Divisional General Manager, Scottish Area, in January, 1943. Mr. Brown served on the late Mr. Frank Pick's London Evacuation Committee, and was from September, 1939, until April, 1940, District Air Raids Precautions Officer for the Kings Cross District.

Dr. John Murray Gibbon, D.Lit., F.R.S.C., who, as recorded in our July 6 issue, has retired from the post of General Publicity Agent, Canadian Pacific Railway, which he has held since 1913, was born in Ceylon, and was educated at Aberdeen, Christ Church, Oxford, and Gottingen, and took an art course in Paris. He entered Fleet Street in illustrated journalism, and eventually became Editor of the once-famous weekly, *Black & White*, and a contributor to *The Illustrated London News*. In 1907 he joined the London Office of the Canadian Pacific

Railway to supervise its European publicity. During that period of considerable emigration, the work done by Dr. Gibbon was so outstanding that, six years later, he was transferred by Lord Shaughnessy, the then President of the company, to Montreal, to take charge of the world-wide advertising and publicity of the C.P.R. Under Dr. Gibbon's inspiration, the company staged a festival at Quebec, featuring a revival of the arts and handicrafts of the inhabitants, which was so successful that other festivals were held. He is the author of novels, poems, and other works, including "Steel of Empire," the official history of the C.P.R., and founded the Canadian Authors' Association. Dr. Gibbon is a Fellow of the Royal Society of Canada. He has the distinction of having a pass in the Rocky Mountains named after him.

#### L.M.S.R. STAFF CHANGES

Mr. T. Firth, Assistant to Superintendent of Organisation & Staff, Chief Commercial & Chief Operating Managers' Office, Watford, H.Q., to be Staff Assistant to Chief Commercial & Chief Operating Managers, Watford, H.Q.

Mr. R. Hunter, District Goods & Passenger Manager, Sheffield, to be Deputy Goods Terminal Superintendent, Chief Operating Manager's Office, Watford, H.Q.

Mr. W. B. Carter, District Goods & Passenger Manager, Derby, succeeding Mr. R. Hunter as District Goods & Passenger Manager, Sheffield.

Mr. L. S. Kettle, Assistant District Goods Manager, Manchester, to be District Goods & Passenger Manager, Derby.

Mr. J. E. Rigby, Agent for Accounts, District Goods Manager's Office, Manchester, to be Assistant District Goods Manager, Manchester.

Mr. E. Dawson, Head of Section (Accounts & Outstandings), Chief Commercial Manager's Office, Watford, H.Q., to be Assistant (Special Duties), Chief Commercial Manager's Office, Watford, H.Q.

Mr. G. E. Curtis, Assistant District Goods Manager, Warrington, to be Assistant to Chief Commercial Manager (Goods), Watford, H.Q., in place of Mr. F. Grundy, promoted.

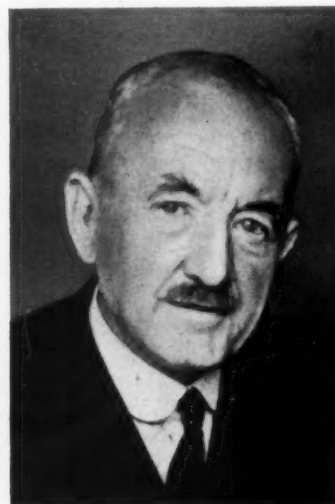
Mr. H. Shufflebotham, Commercial



Photo

**Mr. E. W. Arkle**

Appointed Goods Manager, Scottish Area, L.N.E.R.



**Mr. E. G. Garstang**

District Goods Manager, Manchester, L.M.S.R., 1941-45



**Dr. J. M. Gibbon**

General Publicity Agent, C.P.R., 1913-45



Assistant to District Goods Manager, Warrington, succeeding Mr. G. E. Curtis as Assistant District Goods Manager, Warrington.

Mr. A. Higham, Chief Transit & Station Working Clerk, District Goods Manager's Office, Warrington, to be Assistant to District Goods Manager, Warrington.

Mr. H. P. Aggleton, District Goods Manager, Warrington, to be District Goods Manager, Manchester, in place of Mr. E. G. Garstang, retiring.

Mr. J. Fallows, Assistant District Goods & Passenger Manager, Chester, succeeding Mr. H. P. Aggleton as District Goods Manager, Warrington.

Mr. J. Hollingworth, Joint Goods Agent, Burton, L.M.S.R.-L.N.E.R., to be Assistant District Goods & Passenger Manager, Chester.

Mr. F. Moxon, Assistant District Goods Manager, Birmingham, to be Station Working Assistant, Broad Street, in place of Mr. H. B. Taylor, seconded for special duties.

Mr. J. Walkden, Goods Agent, Hinckley, to be Goods Agent, Leicester, in place of Mr. W. H. Yemm, retired.

Mr. J. W. S. Thomas, Goods Agent, Nuneaton, succeeding Mr. J. Walkden as Goods Agent, Hinckley.

Mr. J. J. Barry, Cashier, Goods Department, Leicester, to be Goods Agent, Nuneaton.

Mr. H. Smith, Goods Agent, Longport, to be Joint Goods Agent, Huddersfield, L.M.S.R.-L.N.E.R., in place of Mr. H. Grindrod, retiring.

Mr. R. M. Davis, Chief Clerk, Goods Department, Derby (St. Mary's), succeeding Mr. H. Smith as Goods Agent, Longport.

Mr. T. E. Verity, Joint Goods Agent, Keighley, L.M.S.R.-L.N.E.R., to be Goods Agent, Leeds (Wellington Street), in place of Mr. W. H. B. Smith, retiring.

Mr. D. W. L. Haviland, Goods Agent, Longwood & Milnsbridge (at present O.H.M.S.), succeeding Mr. T. E. Verity as Joint Goods Agent, Keighley, L.M.S.R.-L.N.E.R.

Mr. H. Selvester, Goods Agent, Soho, to be Goods Agent, Walsall, in place of Mr. C. R. Hughes, retiring.

Mr. C. H. Cole, Goods Agent, Dudley, succeeding Mr. H. Selvester as Goods Agent, Soho.

Mr. T. E. Tatem, Chief Accounts Clerk, District Goods Manager's Office, Wolverhampton, to be Goods Agent, Dudley.

Mr. B. Audsley, Joint Goods Agent, Wakefield, L.M.S.R.-L.N.E.R., to be Goods Agent, Bradford (Bridge Street), in place of Mr. V. Oates, deceased.

Mr. P. Watkinson, Joint Goods Agent, Batley, L.M.S.R.-L.N.E.R., succeeding Mr. B. Audsley as Joint Goods Agent, Wakefield, L.M.S.R.-L.N.E.R.

Mr. C. F. Addlesee, Goods Agent, Heckmondwike, to be Goods Agent, Batley, L.M.S.R.-L.N.E.R.

Mr. G. F. Stoddart, Goods Agent, Hollinwood (at present O.H.M.S.), to be Goods Agent, Denton, in place of Mr. A. Shirt, promoted.

Captain A. Kirby, Master, Garston, to be Dock & Harbour Master, Barrow, in place of Captain A. Coates, retiring.

Mr. G. W. Naylor, Yardmaster, Healey Mills & Horbury Junction, to be Assistant District Controller, Wakefield, in place of Mr. H. J. Hill, retiring.

Mr. W. Naylor, Yardmaster, Rugby, to be Yardmaster, Healey Mills & Horbury Junction, in place of Mr. G. W. Naylor.

Mr. E. F. Boivie, Dock & Harbour Assistant, Chief Engineer's Department,

Fleetwood, to be Assistant to District Engineer, Blackburn, in place of Mr. W. F. Beatty, promoted.

Mr. F. R. McRae, Chief Draughtsman, Barrow, succeeding Mr. E. F. Boivie, as Dock & Harbour Assistant, Chief Engineer's Department, Fleetwood.

Mr. J. P. Thomas, General Manager (Railways), L.P.T.B., from 1933 to 1938, who was recalled from his retirement to organise arrangements for persons seeking shelter on the Underground from air raids, has retired for the second time.

Mr. J. D. Lewis, M.C., has been appointed General Manager of the Darlington Works of Robert Stephenson & Hawthorns Limited. Mr. Lewis was previously District Locomotive & Carriage Superintendent, Burma Railways.

Colonel the Rt. Hon. Sir George Loyd Courthope, Bt. (a Director of the Southern Railway Company), who received a Barony on the occasion of the Dissolution of Parliament, has taken the title of Baron Courthope, of Whiligh in the County of Sussex.

The Rt. Hon. Sir Douglas Hewitt Hacking, Bt. (a Director of Thomas Tilling Limited, and Bristol Tramways & Carriage Co. Ltd.), who received a Barony on the occasion of the Dissolution of Parliament, has taken the title of Baron Hacking, of Chorley in the County Palatine of Lancaster.

The report of J. Stone & Co. Ltd. states that four Directors have resigned in accordance with a decision reached during the war that they would take that step on the conclusion of the war with Germany. In addition, conditions arose which indicated the termination of Mr. G. R. Lee's association with the company; and Mr. A. P. H. Aitken, whose election to the

board was intended as a temporary measure, has resigned.

The board has co-opted Mr. A. H. Chilton, Mr. F. A. G. Powell-Jones and Mr. A. J. S. Brown, who have service agreements with the company.

The members of the board, other than those named above, are: Mr. K. H. Preston (Chairman), Sir Frederick Preston, Messrs. B. W. Preston, W. J. Ruston, R. H. Lee, N. H. Morris and F. R. W. Preston.

Mr. E. Hallam, A.C.I.S., Secretary to the United Automobile Services Limited, terminated his employment with the company on June 30. Mr. R. G. Watt, Chartered Accountant, has been appointed in his place.

#### SOUTHERN RAILWAY STAFF CHANGES

##### *Estate & Rating Department*

Mr. L. C. Arscott, Rating Assistant, Elmstead Woods, has retired.

Mr. R. W. Boorman has been appointed Rating Assistant, Elmstead Woods, *vice* Mr. Arscott.

#### L.N.E.R. APPOINTMENTS

Mr. C. G. G. Dandridge, Passenger Manager (Southern Area), also Advertising Manager, will shortly relinquish the duties of the latter post.

Mr. A. J. White, Chief of Police (Southern Area), to be Advertising Manager in succession to Mr. C. G. G. Dandridge.

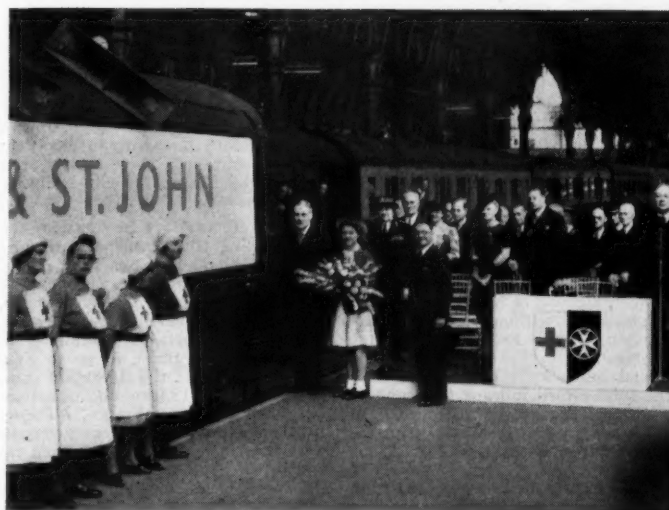
Mr. N. McK. Jesper to be Chief of Police (Southern Area).

Mr. S. J. C. Chapman to be Locomotive Accountant (Scottish Area) with headquarters at Cowlairs.

Mr. T. Arnott to be Stationmaster, Edinburgh (Waverley).

Mr. J. Ogston, Personal Secretary to the Chief General Manager, to be Assistant District Goods & Passenger Manager, Dundee.

### Red Cross Exhibition Coach at Paddington, G.W.R.



Lord Wigram, Chairman of the Red Cross Sports Committee (left), opening the Red Cross & St. John Exhibition Coach at Paddington Station, G.W.R., on June 25 (see paragraph in our June 29 issue). At the extreme right (behind microphone) is Lord Portal, Chairman of the Great Western Railway Company

## TRANSPORT SERVICES AND THE WAR—302

### Last L.M.S.R. Evacuees Specials

Two special L.M.S.R. evacuee trains which reached Euston on July 9 from Cumberland and North Wales brought back to London the last of the evacuees from the L.M.S.R. areas. Since June 4, 33 special evacuee trains have been run by the L.M.S.R., carrying 15,476 passengers.

### G.W.R. Service to Ireland

The Great Western Railway has announced that the steamer service to Ireland via Fishguard and Waterford will be resumed on July 16. There will be a thrice-weekly service in each direction from England on Monday, Wednesday, and Friday nights; and from Ireland on Tuesday, Thursday, and Saturday evenings.

### Permits now Unnecessary for Orkney Islands

The War Office announced on June 22 that the Order declaring the County of Orkney to be a protected place has been revoked and permits are no longer necessary to enter the county. This modifies the statement made in our June 29 issue, which closed for press before the present War Office announcement reached us.

### Dining Cars on Boat Trains

Restaurant cars have been restored on the Channel Islands boat train from Waterloo to Southampton, and on the Continental boat train from Victoria to Newhaven.

The use of these two cars has been authorised specially by the Ministry of War Transport in view of the long throughout journey times involved, the sea crossings, and the uncertainty of food conditions in France and the Channel Islands.

### Friday Travel in Eire

From July 6, Friday railway services have been resumed on the main-line railways of the Irish Transport Company, thus giving service on five days in the week instead of four as heretofore. The Government authorisation to resume Friday train services is limited to the summer months, as fuel is still in short supply.

In addition, limited Sunday train services to Bray, Cobh, Tramore, and Youghal, have also been authorised as a concession to workers and children who have long been deprived of their weekly outing.

It is officially stated that there is still no prospect of any early resumption of normal railway passenger services.

### Improvements in Road Passenger Facilities

The Ministry of War Transport has announced that it is now possible to allow greater freedom in the provision of buses and coaches for private parties and some resumption of excursions and tours by road. In future operators will be free to provide the following facilities without requiring the prior sanction of the Regional Transport Commissioners:—

(a) Special buses for private party trips where the total return mileage from and to the garage does not exceed 70 miles. (In London, for holiday or recreational trips the distance is limited for the present to 50 miles.)

(b) Excursions and tours where the total return mileage from and to the garage does not exceed 50 miles.

Journeys beyond these limits still need the prior sanction of the Commissioners.

The extent to which operators are able to provide these facilities depends on the availability of crews. Permission to run these journeys is subject to the condition that they must not interfere with the full operation

of stage carriage, special workers', and other essential services.

### Basle-Paris Train Service Resumed

A direct train service between Basle and Paris, via Mulhouse and Belfort, was resumed on Sunday, July 1. The journey takes 14½ hr.

### Zurich-Paris Air Line

Swissair and Air Force propose resuming the Zurich-Geneva-Paris air line jointly on Monday, July 16. There will be one departure daily in each direction.

### Verona-Milan Railway Traffic

According to recent information from Italian sources, traffic on the Verona-Milan main line was resumed on June 14 despite an earlier message indicating that repairs would not be completed before the middle of July.

### Brenner Line Reconstruction

Recent reports from Austria state that the work of rehabilitating the 21-mile Austrian section of the Brenner line between Innsbruck and Brennersee frontier station is being carried on "feverishly." The same remark holds good in respect of the southern section of the line beyond Brenner frontier station. It is believed that through traffic between Innsbruck and Verona will be resumed within a few weeks.

A new 1,500-ft. railway bridge across the River Po, between Bologna and Verona, was brought into use on July 7, according to a Reuters message.

### Reconstruction of Belgian Railways

All of the 358 railway bridges destroyed by the Germans in Belgium during their retreat have now been repaired, and locomotives and rolling stock are already being handled in the central workshops at Mechlin of the Belgian National Railways, which had been put out of service by Allied bombing. Work has also been resumed in the railway repair shops at Salzinne, which were sabotaged by the Germans before the liberation, and the output there is stated to be the same as before the war. During the past winter, the Belgian workers repairing locomotives worked in the open air for 12 hr. a day.

Before the war the Belgian railways possessed some 3,500 locomotives. Of these, only about 1,000 remained at the time of the liberation, and most were in bad condition. Today there are 1,500. The number of goods wagons fell from upwards of 100,000 before the war to 55,000 at the time of the liberation. These figures are exclusive of the National Light Railways (the Vicinaux).

### Transport in France

Discussing the transport situation in France, General Frank S. Ross, U.S. Army Chief of Transportation, European Theatre of Operations, said recently that the U.S. Army had assembled in Great Britain, from pre-fabricated parts, 21,000 railway vehicles and had ferried them across to France in the early days of the liberation campaign. Subsequently, 13,000 additional wagons were assembled in France. These, with 1,850 locomotives of American construction, were now in operation on French railways and in the zone of American occupation in the German Reich. This equipment, said General Ross, was not likely to be withdrawn from the European area. It was not of American standard type, being much lighter than that used on U.S.A. railways. It was built to do a job and did it satisfactorily. It was not susceptible of being taken apart and again re-assembled.

General Ross said that French officials had estimated that approximately 450,000

railway wagons were on French railway lines or on adjacent tracks across the French frontiers at the beginning of hostilities in Europe. Inventories last September, he added, showed that between 225,000 and 240,000 remained on French lines, and that approximately 160,000 were fully operative.

### First Moscow-Königsberg Train

Moscow radio reports that the first passenger train left Moscow, White Russian Station, for Königsberg (East Prussia) on July 5. The route is via Minsk and Vilna. A service is to be maintained on alternate days.

### British Traffic Through Narvik

According to a Swedish radio announcement of July 2, iron ore from Sweden is to be shipped to England via Narvik. The first iron-ore trains from Kiruna are stated to have left for Narvik on July 2. In the early stages, only small quantities of iron ore will be shipped by this route, but it is hoped that transport on a larger scale will follow in the not too distant future. This route shows a substantial saving in time over the long sea route from the Baltic port of Luleå.

### Russian Railway Plans in Northern Norway

According to recent information from Northern Norway, the Soviet Union (which is in occupation of that part of the country) is credited with the intention of building a railway connecting Narvik with the north-western part of Russia, through northern Finland. It is thought that the eastern section of this line would be constituted by the new railway from Kandalashka built after the first Russo-Finnish winter war of 1939-1940.

### Austrian Railway Restoration

According to a recent message from Vienna, traffic was resumed on the 131-mile Vienna-Graz main line on June 14, after a suspension of about ten weeks. There are two stopping trains a day each way, and it takes about 11 hr. to cover the distance, compared with 6½ hr. in 1942. This line is wholly in Russian-occupied Austria. Train services between Ljubljana and Graz were resumed on June 7, as we recorded in our July 6 issue, page 22. One of the most important railway routes connecting Vienna with the south has thus been restored to civilian traffic.

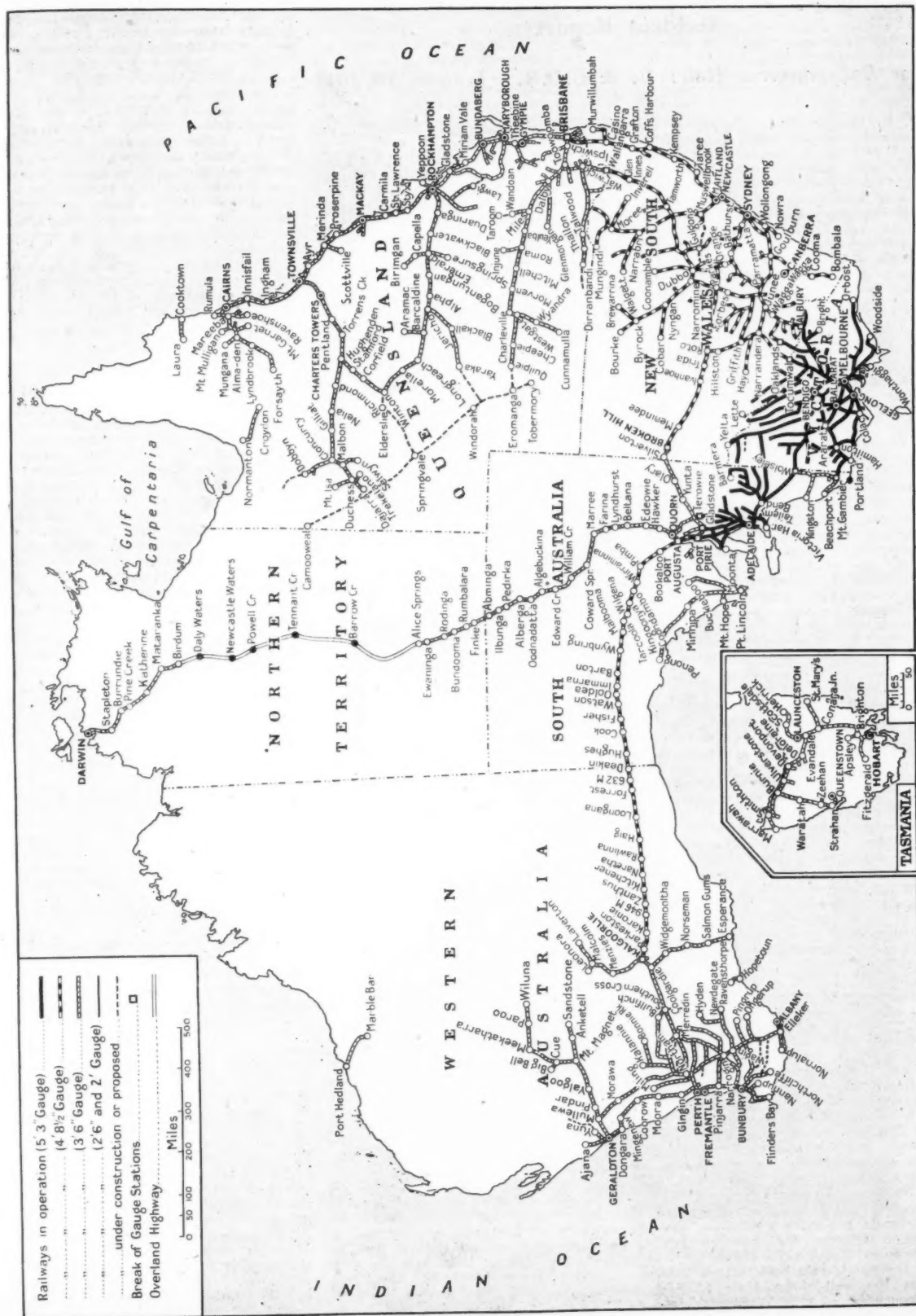
### Jodhpur Railway War Effort

The Jodhpur Railway, in common with other Indian railways, has made large contributions to the war effort. Bayonets have been manufactured by the thousand, shells by the hundred thousand, and pick-axes by the thousand. The railway has assembled 33 locomotives and erected 539 wagons for the Bengal & Assam Railway. Large numbers of doors and windows and other wood work have been manufactured or repaired for the R.A.F. and the U.S. Air Force. Eleven locomotives, four boilers, one railcar, and 439 wagons were released for use overseas and seven heavy goods engines were lent to the B.&A.R. In 1943 the Jodhpur Railway undertook the design, erection and maintenance of the wagon assembly plant at Hyderabad (Sind). Since October, 1944, that plant has been turning out an average of 27 completely-erected American bogie metre-gauge goods wagons every day.

The Jodhpur Railway employees contributed Rs. 5,352, up to September, 1944, to the Viceroy's War Fund, Rs. 1,38,510 to the Defence Savings Provident Fund, and Rs. 16,352 to the Jodhpur Railway War Works Party. During 1941-42 and 1942-43, Rs. 4,00,000 was contributed by the Jodhpur Railway for the purchase of aircraft.



The Railways of Australia



Sketch map showing the Australian railways and their gauges. Principal Commonwealth lines are between Kalgoorlie and Port Pirie (4 ft. 8½ in.), and Port Augusta to Alice Springs and Birdum to Darwin (both 3 ft. 6 in.). (See editorial note page 30)

## Ministry of Commerce of Northern Ireland Accident Report

*Near Ballymacarrett Halt: B. & C.D.R.; January 10, 1945*

Mr. R. Dundas Duncan inquired into the serious collision which occurred at about 7.50 a.m. on January 10, between Victoria and Ballymacarrett Halts, Belfast & County Down Railway, when the 7.40 a.m. rail motor set, Holywood to Belfast, made up of a bogie motor (driving) coach and two 6-wheel coaches, propelled by 2-4-2 tank engine No. 5 in rear, overtook the 7.10 a.m. passenger train, Bangor to Belfast, consisting of 13 6-wheel coaches, drawn by 4-6-4 tank locomotive No. 25, while it was stopped at the outer home signal for Ballymacarrett Junction. There was a red tail-light on the last coach of the standing train and side lights on the guard's compartment, which was in the ninth coach. It was dark and visibility was decreased by local ground fog. The motor train had passed the Sydenham automatic-stop signal at danger, after coming to a stand thereat, under the "stop and proceed" rule. Thirteen passengers in the standing train were killed and nine fatally injured, and 23 passengers in that train and one in the motor train were injured. The guard of the train from Bangor and the conductor and porter of the motor train received minor injuries. Much damage resulted from the collision; the main frame of the motor coach mounted the deck of the rear coach of the other train, leaving its bogie, sweeping away completely the coach superstructure and penetrating the next coach for 10 ft. Single-line working was instituted at 11 a.m. and normal conditions resumed by 5 p.m.

The signalling on the Bangor branch has continuous track circuiting with approach lighted Sykes banner signals, except on the Ballymacarrett-Tillysburn section, the first portion to be converted to automatic signalling in 1926. On that section upper quadrant power operated semaphores are used. (The banner signals are of larger size than those usually seen elsewhere and are not lighted in the same manner: instead of this there is a colour light projector in the base of the signal, with moving spectacle mechanism, displaying the regulation red (or yellow) and green lights as night indications. The banner arms, coloured red or yellow, form the day indication and are displayed against a solid white background. The automatic signalling circuits are arranged on the "normal danger" principle. Automatic distant signals are provided, correctly controlled, and all automatic signals are marked with an "A" sign. The Sydenham up stop signal is the last of this type met from Bangor and is controlled by track circuits extending to the inner home for Ballymacarrett Junction, of which the outer home and distant signals are controlled signals, manually operated. The outer home is at the west (Belfast) end of Ballymacarrett Halt and carries a diamond Rule 55 exemption plate, and has a reverser, returning the arm to danger when a train passes. Telephones are not provided at the signals, but there is telephone communication between the Junction box, Sydenham and Holywood Stations.

The company's rule book, dated 1905, contains the well-known Rule 55 and The Appendix to the Working Time Table dated May 30, 1943, has an instruction amplifying that rule as to signals

carrying a diamond sign. It also has the following regulation:—

"When a train has stood at an automatic stop at 'danger' for two minutes, the driver must give one long whistle and may then pass the signal at 'danger,' proceeding with great care to the next automatic stop signal at which he must also stop two minutes if it is against him and repeat this at each automatic stop signal found at 'danger,' and

"The train must be run at such speed that it can be stopped short of any obstruction and full particulars reported at next stopping station."

The driver of the Bangor train said the distant signal for Ballymacarrett Junction was against him. The rail was slippery and it was very foggy but he could see 150 yd. and was able easily to bring his train to a stand at the white disc at the near end of the halt platform, 41 yd. in rear of the outer home, at which signal he had been detained many times. He had not expected to see fogmen out so early and heard no whistle before the crash.

The driver of the motor train said that when he was ready to leave Sydenham the automatic signal there was against him. He waited the prescribed two minutes and proceeded at caution, as permitted by rule. He observed the Ballymacarrett distant at caution and, after stopping at Victoria Park Halt, again proceeded at caution. The weather had been clear at Sydenham, but the fog was increasing in the vicinity of the halt. After he had gone about 50 yd. it became very thick and he had his front window fully open. It was near this place that he always shut his regulator but, being under caution already, he did not apply his brakes as he did not consider it necessary further to reduce his speed. Soon afterwards he saw a red light 30 yd. ahead and snapped on his brake. The fireman, travelling on the propelling locomotive, was positive that the brakes were not applied before the crash. The porter on the train said he felt a slight jar just before it occurred. The driver further stated that every morning he was particularly careful, as he knew the Bangor train was not far ahead. He was satisfied that he was driving safely under caution at a speed of 8 to 10 m.p.h. He had no experience of an emergency stop but felt sure he could draw up in the length of his train, 59 yd.

Evidence was given by various witnesses as to weather conditions. The signalman at Ballymacarrett Junction said it was becoming very thick by 7.30 a.m. In his opinion fogmen should have been out, but he knew they would report automatically by 7.45 a.m. and no advantage would be gained by sending for them specially. The Bangor train was held at the outer home, he said, because of a failure in the apparatus preventing the signal from coming off when the lever was pulled. He had made two unsuccessful attempts to clear the signal, and at 7.50 a.m. exactly took a hand lamp and proceeded down the line to bring the Bangor train past the stop indication. Before he reached the signal he heard the crash.

The guard of the standing train, who had heard no whistling behind, after waiting 3 min. proceeded to take protection

action, but too late. Evidence confirmed the fact that the outer home had been giving considerable trouble for some time past, especially in wet or frosty weather.

### INSPECTOR'S CONCLUSION

The report places the responsibility for the collision on the driver of the motor train, who had failed to drive at such a speed as to be able to stop short of any obstruction. The amount of damage caused by the collision was inconsistent with a speed of 8 to 10 m.p.h., and it is doubtful whether the brakes were applied even at 30 yd. distance. Although no actual evidence was obtained it seems certain that the door between the driver's compartment and the passenger space was not closed and highly probable that one or more passengers of the crowded car were beside, or close behind, the driver, providing conditions favouring lack of concentration on his part.

### REMARKS

Under ordinary rules a driver is not permitted to pass a controlled stop signal at "danger" except with the indication of some subsidiary signal or under some other special authority, and when a driver is detained at such a signal he has to send his fireman to the box unless exempted by a fixed "diamond" (track circuit) or "D" (telephone) sign on its post (Rule 55). Thus with controlled signals, the signalman is usually in possession of the necessary information to decide whether he is justified in instructing a driver to proceed against a danger indication, for example, in the case of a mechanical or electrical failure.

But if traffic is to be kept moving in the case of an automatic signal, there is no alternative except to allow the driver to move forward, under prescribed precautions, on every occasion when he encounters such a signal at danger, unless there is a telephone from the signal to the signal box, and the track conditions ahead are indicated therein. In this installation, as in the earlier installations in England, there was no such feature, and the "stop and proceed" arrangement applied at the automatic signals at all times without distinction, whether they were properly at "danger" because of occupation of the section ahead, or wrongly so owing to failure of apparatus with the section ahead clear. The application of "stop and proceed" in the former circumstances that is, in the ordinary course of traffic, will obviously occur more often than in the latter, and in the substance amounts to the abandonment of the principle of a space interval between trains, which is fundamental to the block system.

This was appreciated in England after accidents in 1933 and 1934, when the position was reviewed, and steps were taken to ensure that such signals should only be passed at "danger" when it was legitimate and necessary to do so, that is, in the case of failure or other emergency. On main lines in England there is now communication by telephone from every automatic signal to a signal box, and the relevant track circuits are indicated in the box to which the telephone is connected. On receipt of a telephone call from the driver of a train detained at a specified signal, the signalman first satisfies himself as to the identity of the train, and that the signal is *not* properly at danger owing to the occupation of the section ahead of it. If so satisfied, he then switches on an illuminated "P" sign at the signal concerned to minimise any chance of misunderstanding of a verbal message; this

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authorises the driver to proceed at the cautionary speed prescribed.

When considering whether such measures might have been introduced at the time by the company regard must be had to the lighter traffic, the shorter distances, the lower speed and the lesser incidence of fog as compared with English main-line operation. But whatever the circumstances in which the "stop and proceed" arrangement is applied, it remains essential that the driver should proceed at a speed consistent with visibility, so that he can stop short of any obstruction within his range of view.

#### RECOMMENDATIONS

The report reviews certain features of the existing signalling on the section where the collision occurred and, although not criticising the signals themselves or the method of operating and controlling them, recommends higher candle-power lighting and the proving or indication of all track circuits and the provision of telephones and "P" signs at stop signals throughout, the whole to be operated under Clearing House rules. Suitable means of communication with Sydenham Airport Control are also recommended, to offset as far as possible the danger of aircraft crashes on the line.

Mr. Dundas Duncan considers also that a complete modernisation of the rail-motor remote control is called for. It should be more positive and the fireman precluded from operating anything except to stop in an emergency. Side doors for passengers should be put in and the partition between passenger space and driving compartment made solid. Fog operation arrangements should be overhauled; the routine of reports and records of defects in, and repairs to, signals, and like matters should be tightened up. The company has already instituted, as a first step, a control system under which the "stop and proceed" rule will no longer be applied as the result of traffic delay.

## Spanish National Railways

### Traffic returns for the period January to July, 1944

According to statistics published recently by the Spanish National Railways the number of full-wagon loads conveyed in the first half of 1944 exceeded the total attained in the same months of 1943 by about 4½ per cent., and the aggregate working receipts in the same period were only 2 per cent. higher than in the first half of 1943. Detailed figures show the development as below:—

Number of full-wagon loads:—

	1944	1943	difference
January ...	242,535	222,894	+ 19,641
February ...	226,244	225,585	+ 659
March ...	254,258	252,410	+ 1,848
April ...	241,164	238,557	+ 2,607
May ...	270,695	245,909	+ 24,786
June ...	255,290	241,988	+ 13,302
	1,490,186	1,427,343	+ 62,843
Working receipts	£	£	£
January ...	2,895,454	2,725,000	+ 170,454
February ...	2,681,818	2,704,545	- 22,727
March ...	3,038,636	3,165,909	- 127,273
April ...	3,136,363	3,197,727	- 61,364
May ...	3,418,181	3,190,909	+ 227,272
June ...	3,306,818	3,129,545	+ 177,273
	18,477,270	18,113,635	+ 363,635

The result for June, 1944, with a drop of £111,363 was in sharp contrast with the curve which had been rising each month since February, 1944. In February there was a

fall of £213,636 compared with the preceding January. The improved organisation of goods traffic evolved since 1943, in conjunction with a certain improvement of the state of repair of the wagons, resulted in a better general performance. Thus the mileage covered by the goods rolling stock in June, 1944, was, at 2,188,322 miles, 23,521 miles greater than in June, 1943, and there was also an improvement in the mileage covered by passenger trains. This totalled 1,565,536 miles in June, 1944, or 4,424 miles more than in June, 1943.

## Argentine Air Traffic and Navigation

In a Decree issued recently the Argentine Government defined its civil-aviation policy and its procedure respecting aerial navigation and traffic regulations. In the preamble it is stated that the Government reserves full sovereignty over its territorial skies and waters, and will encourage, by all means in its power, commercial and sporting air activities, which, in turn, will be carefully controlled and guided by the State. Similarly, the Government will encourage the investment of private capital in the air lines, and will, wherever necessary, organise mixed-capital companies and

assist in the organisation of air routes as well as in the extension of existing ones.

The Decree also establishes that the State reserves full rights to exploit internal air services if considered necessary, and that all the airports, irrespective of category or purpose, shall belong always to the nation. Internal air lines which extend their services to neighbouring countries shall be the object of special encouragement. The Government will organise, control and enforce all security and safety measures and establish a system of inspection similar to that existing for land and sea services.

Aircraft of all international air-transport companies, and private aeroplanes, irrespective of flag, and carrying either freight or passengers, may enter or leave the country freely, provided they fulfil the following conditions: (1) that arrival and departure be made from one of the frontier airports to be established; (2) that while flying over Argentine territory they shall take the routes established by the Argentine Government; (3) that they shall not pick up or set down passengers or freight or interfere with the spheres of action of the Argentine companies; and (4) that they comply with regulations.

Finally, it is laid down in the Decree that international air lines operating services in Argentina shall do so in accordance with concessions agreed or negotiated under reciprocal treaties.

## Buffet-Lounge-Double Bedroom Cars on the C.P.R.



A loose chair and sofa-bed provides added comfort for night journeys on the Montreal-Toronto route. The sofa-bed is substituted for the usual lower berth sleeping accommodation, and more space is thus available in the compartment. These cars were referred to in our June 8 issue, page 565

## Notes and News

**Grand Union Canal Company.**—The dividend of 3 per cent., less tax, for the half-year to June 30, 1945, on the 6 per cent. non-cumulative preference stock of the Grand Union Canal Company will be payable on August 10.

**Locomotive Draughtsman Required.**—A locomotive draughtsman is required by the Iraqi State Railways, for three years in the first instance. Candidates must have served an apprenticeship in the workshops of a British railway or firm of locomotive builders. See Official Notices page 51.

**Passenger Transport in Madras.**—The policy of the Madras Government in respect of passenger transport services is indicated by an order prescribing the formation of large transport companies, says a Reuter wire. A process of absorption and amalgamation of smaller companies is considered an essential condition for the issue or renewal of permits beyond the current year.

**Canadian National Railways.**—Gross earnings of the Canadian National Railways for the month of May, 1945, amounted to \$37,617,000, an increase of \$1,248,000 in comparison with May, 1944. There was an increase of \$788,000 in operating expenses, and the net earnings of \$7,598,000 were \$460,000 higher. Aggregate gross earnings for the first five months of 1945 were \$174,212,000, or \$1,978,000 less than for the first five months of 1944, and the net earnings of \$30,050,000 showed a decrease of \$2,498,000.

**Canadian Pacific Railway.**—For the month of May, 1945, gross earnings of the Canadian Pacific Railway were \$26,622,000, a decrease of \$695,000 in comparison with May, 1944. The working expenses of \$23,085,000 were \$238,000 greater, so that the net earnings of \$3,537,000 were lower by \$933,000. Aggregate gross earnings January 1 to May 31, 1945, amounted to \$126,654,000, a decrease of \$1,264,000 in comparison with the first five months of 1944, and the net earnings of \$12,567,000 showed a drop of \$5,575,000.

**Fireproof Resistance of Timber Doors.**—A fire resistance test, in accordance with British Standard Definition No. 476—1932, for fire resistance of building materials and structures, has been carried out by the Department of Scientific and Industrial Research for the Timber Fireproofing Co. Ltd. on two Oxylene-treated doors. The report on the test states that the doors satisfied the conditions for one hour exposure to the furnace and can therefore be stated to offer Grade D fire resistance. (The British Standard Definitions classify doors as Grade D which resist the passage of fire for one hour).

**Baltimore & Ohio Railroad Company.**—The summary of the report of the Baltimore & Ohio Railroad Company for the year 1944 shows railway operating earnings of \$387,193,036, an increase of \$29,050,884 over 1943. Operating expenses advanced from \$250,584,353 to \$287,068,754, taxes were \$2,227,636 higher, and equipment and joint facility rents increased by \$890,685, making total expenses \$39,602,722 higher, at \$345,876,656. Other charges—principally rent for leased roads and equipment, interest on debt, etc.—were \$28,143,237, a decrease of \$1,853,470, leaving net earnings \$9,595,042 lower, at \$20,914,438. Freight and passenger traffic in 1944 exceeded all previous records, due largely to war conditions. Totals were 147,314,981 tons and 14,303,937 passengers.

The tax bill at \$48,984,845 was larger in 1944 than ever before. During 1944 the debt of the company was reduced by \$34,801,828. Debt reduction during the last three years was \$105,000,000.

**B.B.C. Broadcast on "Railway Racing."**—On Friday, July 13, in the Home Service, from 7.45 p.m. to 8 p.m., Mr. S. W. M. Hind, of the L.N.E.R. Press Relations Office at York, and Mr. H. R. Jukes of the B.B.C., on "Railway Racing", discuss the famous races between expresses on the East and West Coast routes from London to Aberdeen in 1895.

**New "Pacific" Type Locomotives for Southern Railway.**—The Southern Railway has introduced a new and lighter type of "Pacific" locomotive for use on the main line to the west of Exeter. These engines will be designated "West Country" class and will be numbered 21C100 onwards. Seventy of these are being built and will be named after cities, towns and villages in Wiltshire, Devon, Dorset, and Cornwall.

**New Zealand Railway Society.**—The New Zealand Railway & Locomotive Society, formed in 1944 as the New Zealand Railway Correspondence Society, has adopted a new constitution admitting to membership all persons from the age of 12 upwards. The broad aims of the society are to encourage interest in railway affairs and it publishes its own magazine, *The New Zealand Railway Observer*. The Hon. Secretary & Treasurer is Mr. R. Linfoot, 49, Bombay Street, Ngaio, Wellington, N.Z.

**Railway Canteen at Leeds.**—A staff canteen, seating 220, for L.M.S.R. and L.N.E.R. employees in Leeds, was opened recently at Wellington Street by Mr. T. R. Heaton, District Goods Manager, Leeds, L.M.S.R. This is the largest joint-railway staff canteen in Great Britain. Union representatives and local officers of both companies were present, including Mr. H. R. Statham, District Goods Manager, Leeds, L.N.E.R., Mr. L. W. Ibbotson, Acting District Superintendent, York, L.N.E.R., Mr. A. J. Johnson, District Passenger Manager, Leeds, L.N.E.R., and Mr. H. Bullough, Assistant District Goods Manager, Leeds, L.M.S.R.

**J. Stone & Co. Ltd.**—Trading profit and investment income of J. Stone & Co. Ltd. for the year 1944 amounted, after provision for taxation, to £678,687 (£659,989). Net profit after fees, repairs and depreciation of buildings, and £428,025 (£390,404) for plant maintenance and depreciation, was £224,114 (£238,305). Adding £318,646 brought in makes a total available of £542,760. Nothing is added to reserve account which for 1943 received £50,000. Final ordinary dividend is 15 per cent., making 25 per cent. for the year (unchanged), and the amount carried forward is £353,660. Cancellation of war contracts has not materially affected the 1944 business and the works were fully employed.

**Mexican Railway Sales.**—Mr. Justice Cohen, in the Chancery Division on June 18 sanctioned a scheme of arrangement between Inter-oceanic Railway of Mexico (Acapulco to Vera Cruz) Limited, Mexican Eastern Railway Co. Ltd., Mexican Southern Railway Limited and the different classes of debenture holders and stockholders concerned. The Eastern and Southern lines which are operated by the Inter-oceanic Company together with it form the Inter-oceanic system. As explained in an editorial note of *The Railway Gazette* for March 23, 1945, an agreement had been reached with the Mexican Government for its purchase of the railways for

£612,870. Under the scheme the proposed allocation of the net proceeds of sale, which are estimated to amount to £606,000, is 65 per cent. to the Inter-oceanic, 12 per cent. to the Eastern, and 23 per cent. to the Southern.

**L.N.E.R. Canal Rebates.**—Notice is given by the London & North Eastern Railway Company that as from August 1 the allowance of canal rebates will be suspended until further notice. It is explained

## British and Irish Railway Stocks and Shares

Stocks	Highest 1944	Lowest 1944	Prices	
			July 10, 1945	Rise/ Fall
G.W.R.				
Cons. Ord. ....	62½	55	56½	—
5% Con. Pref. ....	122½	114½	120½	+ 2
5% Red. Pref. (1950) ..	110½	104	105	—
5% Rt. Charge ....	135½	128	131½	—
5% Cons. Guar. ....	134½	125	129½	—
4% Deb. ....	118½	112½	114	—
4½% Deb. ....	118½	114	115½	—
4½% Deb. ....	124½	119½	121½	—
5% Deb. ....	137	129½	135½	—
2½% Deb. ....	77	73½	76½	—
L.M.S.R.				
Ord. ....	34½	27½	28½	—
4% Pref. (1923) ....	64½	55	59	+ 2½
4% Pref. ....	81	72½	77½	+ 2
5% Red. Pref. (1955) ..	105½	102	103½	—
4% Guar. ....	107½	99½	103½	+ 1
4% Deb. ....	111½	104	108½	—
5% Red. Deb. (1952) ..	111	108	108½	—
L.N.E.R.				
5% Pref. Ord. ....	104	7½	7½	— ½
Def. Ord. ....	5½	3½	3½	—
4% First Pref. ....	68½	55½	57½	+ 2
4% Second Pref. ....	35½	28½	29½	+ 1
5% Red. Pref. (1955) ..	101	97½	101½	+ ½
4% First Guar. ....	101½	96½	101	+ 1
4% Second Guar. ....	95½	88½	96	+ 1½
3% Deb. ....	88½	80½	87½	+ 1
4% Deb. ....	110½	103½	108	—
5% Red. Deb. (1947) ..	105½	101½	101½	—
4½% Sinking Fund	—	—	—	—
Red. Deb. ....	107	104½	104½	—
SOUTHERN				
Pref. Ord. ....	80½	71½	75	+ 1
Def. Ord. ....	26½	23	24½	+ 3
5% Pref. ....	122	113½	118½	—
5% Red. Pref. (1964) ..	117½	112½	114½	—
5% Guar. Pref. ....	134	125½	129½	—
5% Red. Guar. Pref. (1957) ....	115½	112½	115½	—
4% Deb. ....	118	110	113	—
5% Deb. ....	135½	127	134½	—
4% Red. Deb. (1962- 67) ....	111½	107½	109½	—
4% Red. Deb. (1970- 80) ....	112	108½	110½	—
FORTH BRIDGE				
4% Deb. ....	107	103	104	—
4% Guar. ....	106½	102	104	—
L.P.T.B.				
4½% "A" ....	125	119	120½	—
5% "A" ....	133½	128	131½	—
3% Guar. (1967-72) ..	99½	98	99	—
5% "B" ....	124½	118½	120½	—
"C" ....	72½	64½	67½	—
MERSEY				
Ord. ....	35½	33	36½	—
3% Perp. Pref. ....	72	66	71	—
4% Perp. Deb. ....	105	103	106	—
3% Perp. Deb. ....	85½	79½	84	—
IRELAND*				
BELFAST & C.D.				
Ord. ....	9	6	6½	—
G. NORTHERN				
Ord. ....	33½	19	26½	—
Pref. ....	49	37	44	—
Guar. ....	70	57½	68½	—
Deb. ....	90½	81½	90	+ ½
IRISH TRANSPORT				
Common ....	—	—	75½	+ ½
3% Deb. ....	—	—	99½	—

\* Latest available quotation

## OFFICIAL NOTICES

None of the vacancies on this page relates to a man between the ages of 18 and 50 inclusive unless he is excepted from the provisions of the Control of Engagement Order, 1945, or the vacancy is for employment excepted from the provisions of that Order.

**A WELL-KNOWN** and old-established firm of Engineers and Merchants, representing a group of leading British manufacturers in India, have a vacancy on their staff for service in that country. Applicants—who should not be above 25 years of age—are invited to submit brief details of schooling, training and subsequent career to Box No. 296, c/o The Railway Gazette, 33, Tothill Street, Westminster, London, S.W.1.

**OVERSEAS EMPLOYMENT: LOCOMOTIVE DRAUGHTSMAN** required by the Iraqi State Railways for 3 years in the first instance. Salary Iraq dinars 50 a month plus high cost of living allowance between I.D. 12 and I.D. 15 a month according to dependants. (I.D. 1 = £1.) Free passages. The post is not pensionable, but there is a Provident fund. Candidates must have served an apprenticeship in the workshops of a British railway or firm of locomotive builders, and have a good knowledge of modern steam locomotive design and construction. A knowledge of diesel traction would be an advantage.

Written applications (no interviews) giving the following essential details: (1) Full name, (2) date of birth, (3) industrial training and experience, (4) name and address of present employers, (5) details of present work should be sent to The Secretary, Overseas Manpower Committee (Ref. 1603), Ministry of Labour and National Service, York House, Kingsway, London, W.C.2. Applications cannot be acknowledged.

### Universal Directory of Railway Officials and Railway Year Book

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Price 20/- net.

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33, Tothill Street, London, S.W.1.

that the estimates of the rate relief accruing to the company under Part 5 of the Local Government Act, 1929, in respect of its canal undertaking have for some time past exceeded the rate relief actually received. In consequence, the aggregate amount of rebates allowed by the company in respect of merchandise carried upon its canals exceeds the aggregate amount of rate relief which has accrued to it in respect of its canal undertaking; and there is now a substantial deficiency in the fund available for allowing such rebates.

#### Buenos Aires Transport Corporation.

—The report of the trustee administering the Buenos Aires Transport Corporation for the year 1944 shows that the underground railways showed a net profit of 10,255,000 pesos, compared with 6,167,000 pesos in 1943. All other services were worked at a loss, although that of the tramways was only 505,000 pesos, against 7,307,000 pesos in the previous year. The net loss on omnibuses rose from 7,404,000 pesos in 1943 to 10,470,000 pesos in 1944; minibuses incurred a loss of 4,829,000 pesos against a loss of 1,612,000 pesos in 1943, and miscellaneous operations resulted in a net loss of 853,000 pesos, against 785,000 pesos deficit in 1943. In 1944 there was also a loss of 58,000 pesos on railcar operations. The losses in all cases except "miscellaneous"

were arrived at after making allowance for renewals. Additional charges of 10,541,000 pesos were made in 1944 pending a resolution by the Control Commission. For the year 1944 the total net loss was 17,001,000 pesos (10,938,000 pesos).

**Dean & Dawson Limited.**—The address of the General Manager's, Secretary's and Accountant's offices of Dean & Dawson Limited is now at 9, Blandford Square, London, N.W.1.

**Davey Paxman & Co. Ltd.**—At the annual general meeting of Davey Paxman & Co. Ltd. held recently, Mr. G. R. Sharpley, Chairman, said that it was the intention of the company to apply its very large productive capacity—the largest in Great Britain for high-power high-speed diesel engines—to meet the great demand for rail traction and marine engines. In doing so, it would be assisted greatly in marketing its products by the arrangements which had been made in association with Ruston & Hornsby Limited in covering the Paxman ranges jointly with those of Ruston & Hornsby Limited by the latter's world-wide selling organisation.

#### S.R. Locomotive "Elders & Fyffes."

—The naming ceremony of the Southern Railway "Merchant Navy" class engine *Elders & Fyffes* was performed at Waterloo

on July 5 by Mr. Henry Stockley, Managing Director of Elders & Fyffes Limited, the ships of which are associated with the West Indies banana imports to the United Kingdom. Among those present were Mr. E. E. Milner and Mr. C. G. Donaldson, Directors, and officers of Elders & Fyffes Limited, together with the Chairman of the Southern Railway Company, Colonel Eric Gore Browne, D.S.O., and the General Manager, Sir Eustace Missenden, O.B.E. The engine is the sixth of a further series of mixed-traffic streamline locomotives of the "Merchant Navy" class, which is being built to the design of Mr. O. V. Bulleid, Chief Mechanical Engineer, Southern Railway.

#### British Insulated Callender's Cables Limited.

—Notice is given of the amalgamation of Callender's Cable & Construction Co. Ltd. with British Insulated Cables Limited, for which purpose a new company—namely British Insulated Callender's Cables Limited—has been formed. This new company has, as and from June 29 last, acquired the main assets of the two companies and will be responsible for their liabilities. At separate class meetings of the stockholders of British Insulated Cables Limited, and at the subsequent general meeting, held on June 29, the resolutions for the amalgamation of the business with that of Callender's Cable & Construction Co. Ltd. had been passed with the requisite majorities.

### Lord Royden presents Stamp Medal for Bravery



Lord Royden, Chairman, L.M.S.R., presenting the Stamp Medal for Bravery to L.M.S.R. Detective-Sergeant Frank Worth who jumped on a moving motor car as it was leaving St. Pancras Station with 15 bales of stolen cloth. He was injured when the car overturned but his action resulted in the conviction of the thieves

### Contracts and Tenders

Below is a list of orders placed recently by the Egyptian State Railways:—

Thomas Bolton & Sons Ltd.: Copper firebox tube plates.

International General Electric Limited: Trolley bases.

S. Denison & Son Ltd.: Locomotive weighing machines.

Crown Spring Co. Ltd.: Springs.

Guest, Keen & Nettlefolds Limited: Locks.

Imperial Chemical Industries Limited: Soda ash.

George Turton Platts & Co. Ltd.: Buffers, forged steel.

National Gas & Oil Engine Co. Ltd.: Engine spares.

Clyde Crane & Engineering Company: Screws.

### Forthcoming Meetings

July 20 (Fri.).—Derry & Toms, High Street, Kensington, W.8. 12.30 p.m. A luncheon meeting. The President, Major R. Falshaw Morkill in the chair.

July 25 (Wed.).—The Institution of Railway Signal Engineers, Victoria Embankment, London, W.C.2. 6 p.m. "Loud-speakers as applied to Railway Operation," Paper by Mr. W. J. Claridge.



## Railway Stock Market

After last week's upward trend, stock markets became hesitant and slightly irregular, although British Funds were well maintained. Industrial shares eased, but profit-taking was very moderate, and the rather lower prices were attributed mainly to the small amount of fresh buying in evidence. Iron and steels were firm generally, aided by satisfaction with recent dividend announcements, particularly Guest Keen's higher payment.

Home rails quietened down and eased slightly, but on balance recorded further good improvement. Preference stocks have been in better demand in view of their attractive yields, particularly those of the L.M.S.R. and L.N.E.R. preferences also moved higher and Southern preferred was good; the latter is considered moderately valued in view of its investment merits and the fact that of the current price 2½ can be considered as representing the pending half-yearly payment.

The belief persists that the interim dividend decisions will be the same as a year ago. There is a faint hope that the L.M.S.R. may reverse the previous conservative policy of not making a half-yearly payment on its ordinary stock, but this is not generally expected. If, as is being suggested, there is a period of intense industrial activity during the next two years, the railways should benefit, because normally their traffics are determined by trade conditions, both home and export. This is an additional reason why in fairness to stockholders the post-war organisation of transport

should be decided with as much celerity as possible. It is true that while the fixed rental agreement continues stockholders are virtually assured of dividends at around last year's rates. On the other hand, it is only logical to assume that if the railways are treated fairly as to post-war changes they should be in a position to pay higher dividends in a period of very active trade conditions. As stockholders have not been allowed during the German war to benefit to any extent from the important work performed by the railways, they have a just claim to whatever benefit can be obtained from post-war trade conditions. Argentine rails moved within narrow limits, but the undertone was firmer, reflecting hopes of improved results in respect of the financial year ended June 30. The market is increasingly hopeful of further payments in respect of interest arrears on Buenos Ayres & Pacific consolidated debentures, Central Argentine 5 per cent. debentures and Argentine Great Western 5 per cent. debentures. In fact, prior-charges of the Argentine railways were in better demand generally. Buyers found that stock was not in large supply, and in some cases prices were marked up sharply. Elsewhere, a feature was a further rise in San Paulo ordinary on dividend estimates. United of Havana 1906 debentures showed small fluctuations, awaiting the reconstruction scheme. French Rail bonds failed to hold best prices. Canadian Pacifics were less active, and have reacted further following their recent advance.

As compared with a week ago, Great Western has risen further from 56 to 56½, and the 5 per cent. preference moved up from 118½ to 120½; the 4 per cent. debentures were maintained at 114, L.M.S.R. has risen further from 28½ to 28¾ (after reaching 29¼), the 1923 preference from 56½ to 59½, and the senior preference from 75½ to 77½. L.N.E.R. second preference was 29½, compared with 29 a week ago, and the first preference 57½, compared with 55½; the first guaranteed moved up to 101½ and the second guaranteed to 96. Southern deferred rose on balance from 23½ to 24½ and the preferred from 73½ to 76; the 5 per cent. preference rose from 116 to 118½. London Transport "C" participated in the upward trend, rising to 68, compared with 67½ a week ago.

In the Argentine section, Buenos Ayres Great Southern improved on the week from 11½ to 12½, the 5 per cent. preference at 27½ gaining a point, and the 4 per cent. debentures were 65½, compared with 63½. Fractional gains predominated among other stocks. Argentine Great Western 5 per cent. debentures were good at 59½, also Central Argentine 5 per cent. debentures at 68, and Buenos Ayres & Pacific consolidated debentures at 59. Nitrate Railways ordinary shares improved to 73s. 1½d. San Paulo was 56½, but United of Havana 1906 debentures eased to 24½. Canadian Pacifics were 20½, compared with 21½ a week ago. In French Rails, Nord was a point higher at 126½, but in contrast Midi eased slightly to 105½.

### Traffic Table and Stock Prices of Overseas and Foreign Railways

Railways	Miles open	Week ended	Traffic for week		No. of Weeks	Aggregate traffic to date			Shares or Stock	Prices					
			Total this year	Inc. or dec. compared with 1943/4		Totals		Increase or decrease		Highest 1944	Lowest 1944	July 10, 1945	Yield % (See Notes)		
						1944/5	1943/4								
			£	£		£	£	£							
Antofagasta (Chili) & Bolivia	834	1.7.45	29,860	+	140	26	800,360	734,970	+	65,390	Ord. Stk.	13½	9½	10	Nil
Argentine North Eastern ...	753	30.6.45	20,187	+	3,150	52	964,368	808,906	+	155,462		6½	4½	9	Nil
Bolivar ...	174	June, 1945	4,640	—	598	26	30,275	31,756	—	1,481	6 p.c. Deb.	18½	7½	8½	Nil
Brazil ...	...	...	...	...	...	...	...	...	...	...	Bonds	19½	15	23½	Nil
Buenos Ayres & Pacific ...	2,773	30.6.45	118,093	+	30,531	52	7,059,406	5,902,625	+	1,156,781	Ord. Stk.	7½	3½	5½	Nil
Buenos Ayres Great Southern	5,080	30.6.45	213,500	+	41,500	52	10,810,687	9,562,750	+	1,247,937	Ord. Stk.	14½	9½	12	Nil
Buenos Ayres Western ...	1,924	30.6.45	79,187	+	9,500	52	3,690,375	3,136,187	+	554,188	"	13½	9½	12	Nil
Central Argentine ...	3,700	30.6.45	168,172	+	12,166	52	9,358,944	8,404,300	+	954,644	"	10½	6½	8½	Nil
Do. ...	...	...	...	...	...	...	...	...	...	...	Dfd.	4½	3	4½	Nil
Cent. Uruguay of M. Video	972	30.6.45	41,616	+	1,665	52	1,857,502	1,826,212	+	31,290	Ord. Stk.	5½	4	6½	Nil
Costa Rica ...	262	May, 1945	27,205	+	680	38	259,151	251,679	+	7,472	Stk.	17½	14½	15	Nil
Dorada ...	70	June, 1945	33,780	+	7,554	26	182,375	149,309	+	33,066	1 Mt. Deb.	101	101	101½	£5 18½
Entre Rios ...	808	30.6.45	27,844	+	5,725	52	1,304,506	1,075,712	+	228,794	Ord. Stk.	6½	4½	5	Nil
Great Western of Brazil	1,030	30.6.45	20,500	—	2,700	26	654,300	577,200	—	77,100	Ord. Sh.	38/-	23/3	27/6	Nil
International of Cl. Amer.	794	May, 1945	\$231,658	+	\$54,597	22	\$1,047,719	\$1,092,563	—	\$44,844		—	—	—	—
Inter-oceanic of Mexico	22½	June, 1945	7,106	—	1,171	26	36,929	46,430	—	9,501	1st Pref.	1½	½	1	Nil
La Guaira & Caracas...	1,918	30.6.45	63,118	+	25,179	26	1,233,553	1,176,698	+	56,855	5 p.c. Deb.	88	79	78½	£6 7/5
Leopoldina ...	483	30.6.45	ps. 824,800	+	ps. 256,900	26	ps. 15,826,600	ps. 10,935,900	+	ps. 4,890,700	Ord. Stk.	5½	4½	4	Nil
Mexican ...	319	May, 1945	19,738	+	3,567	48	195,444	187,809	+	7,635	Ord. Stk.	2	2	2	Nil
Midland Uruguay ...	382	30.6.45	6,336	+	1,281	26	91,480	92,506	—	1,026	Ord. Sh.	75/10	65/10	72/6	£3 9½
Nitrate ...	274	29.6.45	669,609	+	621,407	52	63,180,966	62,744,795	+	6436,171	Pr. Li. Stk.	79½	68	77½	£7 14½
Paraguay Central ...	1,059	June, 1945	124,966	+	3,615	52	1,554,661	1,330,647	+	224,014	Pref.	9	10	9½	Nil
Peruvian Corporation	100	May, 1945	112,200	+	18,000	48	1,420,000	1,404,000	+	16,000	Ord. Stk.	57½	46	56½	£3 10½
Salvador ...	153½	...	...	...	...	...	...	...	...	...	Ord. Sh.	21/3	13/9	13/9	Nil
San Paulo ...	156	June, 1945	3,795	—	1,735	52	36,700	65,330	—	28,630	Ord. Stk.	4	2½	2	Nil
Taita ...	1,301	30.6.45	50,978	—	620	52	2,810,599	2,998,705	—	188,106	Ord. Stk.	—	—	—	Nil
United of Havana	73	May, 1945	1,830	—	151	48	18,089	16,412	+	1,677		—	—	—	Nil
Uruguay Northern ...	...	...	...	...	...	...	...	...	...	...					
<b>Canada</b>															
Canadian Pacific ...	17,028	30.6.45	1,848,400	+	44,600	25	30,945,600	30,915,000	+	30,600	Ord. Stk.	17½	13½	21	£4 15½
<b>India</b>															
Barsi Light ...	202	May, 1945	23,902	+	652	9	54,975	51,682	+	3,293	Ord. Stk.	129½	97½	129½	£3 9½
<b>Various</b>															
Egyptian Delta ...	607	20.5.45	15,100	—	3,290	7	84,641	94,755	—	10,114	Pr. Sh.	7½	5½	6½	Nil
Manila ...	...	...	...	...	...	...	...	...	...	...	B. Deb.	63½	58	59	Nil
Midland of W. Australia	277	May, 1945	17,489	—	4,344	48	207,237	312,987	—	105,750	Inc. Deb.	101½	99½	95½	£4 3/9
Nigeria ...	1,900	26.5.45	277,630	+	23,531	4	8,639,849	7,582,115	+	1,057,734		—	—	—	Nil
South Africa ...	13,301	2.6.45	971,532	+	155,874	8	—	—	—	—		—	—	—	Nil
Victoria ...	4,774	Feb., 1945	1,252,999	—	43,035	4	—	—	—	—		—	—	—	Nil

Note. Yields are based on the approximate current price and are within a fraction of ½. Argentine traffics are given in sterling calculated @ 16 pesos to the £

† Receipts are calculated @ 1s. 6d. to the rupee